

# A revision of *Lagerstroemia* L. (Lythraceae)

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## SUMMARY

*Sections:* As a result of these studies the Sections given by Koehne (1903) and generally followed by most botanists have been revised. For priority reasons Sect. *Sibia* DC. has been re-established with *Velaga* as a synonym, and because of the affinities Koehne's sect. *Pterocalymma* has been made into a subsection of *Sibia*.

Similarly *Adambea* DC. has been re-established with *Adambeola* Koehne and *Muenchhausenia* Koehne as synonyms. However, two new subsections have been added to it:

Subsect. *Microcarpidium* to include the small flowered and small fruited species which bear 12–14 superficial ridges to the flower buds and which were placed by Koehne together with unrelated species of *Sibia* Subsect. *Sibia*. A new subsection *Banglamea* has been created to include a group species confined to Indochina and South China, which differs from the species of *Adambea* proper in having tomentose sepals in the superior half within. The sect. *Trichocarpidium* Koehne has been subdivided into subsections to distinguish between the species which have glabrous calyces within (Subsect. *Trichocarpidium*) from those which are tomentose in the sepals in the superior half within, *Trichosepalum*. No species of this section is found wild in any parts, east of Burma, so that neither *L. rotterli* Clarke nor *L. hirsuta* (Lam) Willd. could actually be wild in India, especially since from the description they both should be *Trichosepalum* species which are limited to Lower Burma, Malaysia, Thailand, Indochina, and Indonesia. In fact *L. rotterli* is only a synonym of *L. loudonii*, a native of Thailand but widely spread in cultivation. *L. hirsuta* (Lam) Willd. has been shown to be a badly drawn figure of *L. reginae* with a description of the tomentum of another plant.

### *New Species:*

*L. alatulata*, *L. aruensis*, *L. borneensis*, *L. crassifolia*, *L. cristata*, *L. costa-draconis*, *L. inopinata*, *L. langkawensis*, *L. moluccana*, *L. pterosepala*, *L. pustulata*, *L. subangulata*.

### *New varieties or forms:*

*L. cochinchinensis* var. *ovalifolia*. *L. macrocarpa* var. *reflexa*, *L. noi* var. *longifolia*, *L. ovalifolia* var. *apiculata*, *L. ovalifolia* var. *exapiculata*, *L. ovalifolia* var. *minor*, *L. ovalifolia* var. *novoguineensis*, *L. ovalifolia* var. *riedeliana* (Oliv.) comb. nov., *L. ovalifolia* var. *ruptilis*, *L. piriformis* f. *batitanan* (Vidal) comb. nov., *L. piriformis* var. *callosa*, *L. piriformis* var. *valleculata*, *L. speciosa* var. *intermedia* (Koehne) comb. nov.

### *Reduced species:*

*L. engleriana* = *L. archeriana*, *L. hirsuta* = *L. reginea*, *L. punctulata* = *L. speciosa* prob., *L. rotterli* = *L. loudonii*, *L. thorellii* = *L. duperreana*, *L. thomsonii* = *L. microcarpa*, *L. lanceolata* Brandis & Clarke = *L. microcarpa*.

### *New Name:*

*L. gagnepainii* nom. nov. (basynym *L. glabra* Gagn.)

**DISTRIBUTION:** The genus occurs in China, India, Burma, Indochina, Thailand, Malay Peninsula, Indonesia, Celebes, Borneo, New Guinea, North Australia and the Philippine Islands. (See map 1 Section *Sibia*. Map 2 Section *Adambea* and Map 3 Section *Trichocarpidium*.)

Map 4 shows the Forest Regions of Thailand.

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## INTRODUCTION

The junior author, on obtaining a Fellowship from the government of the Republic of Singapore, was assigned to make himself familiar with the taxonomy of the species of *Lagerstroemia*, a genus of great economic importance in his native Thailand. As the literature available in English was rather outdated, he sought the assistance of the senior author who provided him with a translation of the "Key to the Species" first from Gagnepain's *Flore de L'Indochine* (II, 1923) and then from Koehne's revision in Engler's *Pflanzenreich* (17, 1903).

However he was soon faced with new difficulties due partly to the deficiencies in the keys and the specific descriptions, but mostly to inadequate definitions of some species that permitted equivocal interpretations. This meant an inquiry into the types and nomenclature of some important species in the genus, involving the need to borrow material from other herbaria—a task beyond the competence of the junior author. Hence the senior author decided to join him in this inquiry which has resulted in this revision. Though the specimens from the herbaria of Bogor and Leiden were not available for consultation, the task was prosecuted with care so as to make the solutions, where possible, quite definite.

In this paper the specific descriptions in English were drawn by the junior author who also arranged most of the citations of the specimens that were not types or their duplicates; the senior author has been responsible for dealing with the typification or nomenclatural problems and for the diagnoses in Latin.

## LAGERSTROEMIA Linnaeus

Trees or shrubs. Leaves often opposite, distichous, entire. Panicles axillary and terminal. Flowers often showy; calyx tube funnel shaped or campanulate, smooth or hairy, grooved, angular or subulate; the lobes 6, sometimes 7–9, ovate, subacute, valvate; petals 6 or more, inserted at the summit of the calyx tube, clawed, wrinkled; stamens many, inserted near the bottom of the calyx tube, the filaments long, slender, exserted; ovary subglobose or ellipsoid, sessile, 3–6 celled, the style long, bent, the stigmas capitate, the ovule very many, ascending, the placenta axile. Capsule more or less adnate to the calyx, globose or ellipsoid, smooth or hairy, 3–6 celled, 3–6 valved. Seeds many, elongate and winged.

## Sections and Subsections

Early authors were not very particular in distinguishing between sections and subgenera unless both these infrageneric subdivisions occurred under the same genus. Thus Blume (1852) and Miquel (1855) regarded De Candolle's (1826) sections as equivalent to their subgenera, while Koehne (1883 and 1903) treated all these taxa as sections when published. Nevertheless, the last mentioned author rejected all the earlier sectional names or reduced some of them to subsections, but only to adopt new sectional or subsectional names, on the plea that older generic names have priority



in considering names to sections or subsections. However, under the modern Code of Botanical Nomenclature, validly published names of supra specific rank are not priorable for the taxa of another rank. Thus names like *Munchausia* L. (1770), *Pterocalymma* Turcz. (1846) and *Velaga* Gaertn. (1791), though valid and priorable as generic names, cannot be included in considering the priority of names for the sections and subsections of the genus *Lagerstroemia* L.

In some cases old generic names were adopted for sections interpreted in a different sense from that indicated by the protolog. Thus the monotypic generic name *Munchausia* L. (1770) based on a plant producing a 12-furrowed calyx was later (1771) adopted by Linnaeus himself to a species having a smooth calyx, and De Candolle (1826) adopted *Munchausia* as a sectional name to the latter taxon and defined it accordingly. Hence there is no justification in trying to typify Section *Munchausia* DC. on the original type of the genus. In view of this no attempt has been made in tracing the history and the "prehistoric" types of the names redefined as sections like *Adambea*, *Pterocalymma*, *Sibia*, etc.

#### I. *Ovary glabrous:*

- A1. Calyx ridges as many as the sepals or reduced to warts or auricles

Sect. *SIBIA* — a

- a1. Calyx ridges slightly developed, often disappear later in the calyx tube without any warts or auricles

Subsect. *Sibia*

- a2. Calyx ridges distinct, angular or reduced to auricles

Subsect. *Pterocalymma*

- A.2 Calyx ridges twice the number of sepals (12 or more)

Sect. *ADAMBEA* — b

- b1. Flower buds and fruits generally large, ridges distinct, sepals glabrous within

Subsect. *Adambea*

- b2. Flower buds small, ridges clear but superficial, sepals glabrous within, fruit much smaller

Subsect. *Microcarpidium*

- b3. Flower buds or fruits generally small; ridges as in b1 or reduced to warts, sepals tomentose or pubescent in the superior half within

Subsect. *Banglamea*

#### II. *Ovary tomentose:*

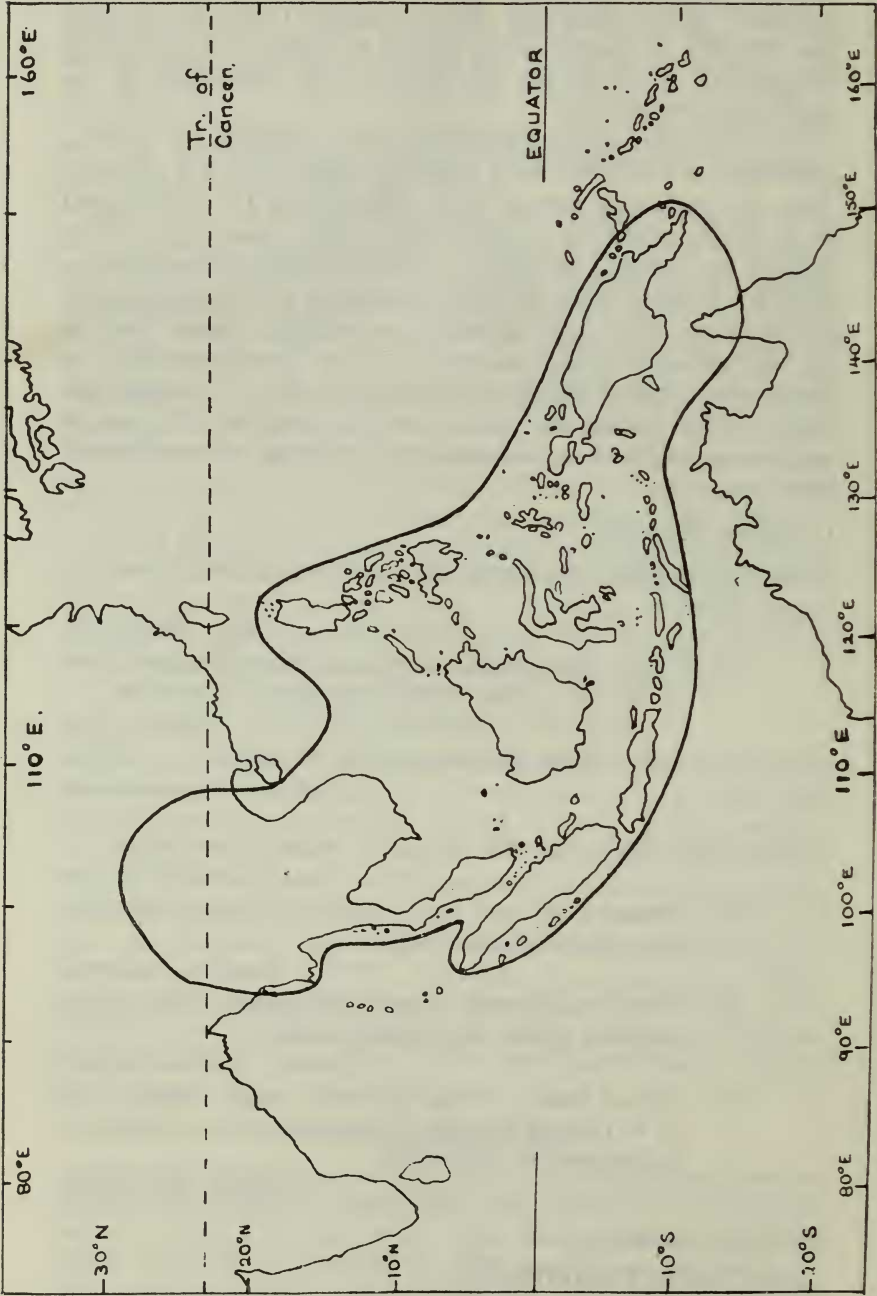
##### Sect. *TRICHOCARPIDIUM*

- c1. Calyx lobes glabrous within

Subsect. *Trichocarpidium*

- c2. Calyx lobes tomentose in the superior half within

Subsect. *Trichosepalum*



Map 1. Distribution of Section *Sibia*: Subsect. *Pterocalymma* ( )

Section **Sibia**

Section **Sibia** DC. in Mem. Sec. Helv. III, 2 (1826) 70 et. Prodr. III (1828) 93; Bl., Mus. Lugd. Bat. II (1856) 125 (subgen.) *Velaga* Miq., Fl. Ind. Bat. I (1856) 622 & 1090 (subgenus); Clarke in Hook. f. Fl. Brit. Ind. II (1879) 575 (sect.); Koehne in Engl. Jahrb. IV (1883) 15 & Engl. Pflanzenr. 17 = IV 216 (1903) 257.

Ovary glabrous, ridges as many as the sepals.

Both *Sibia* and *Velaga* were described for flowers having a smooth calyx, but actually the ridges are as many as the sepals even in both the syntypes, but generally they become obscure and do not produce either conspicuous ridges or auricles as in the subsection *Pterocalymma*.

Section *Munchhausia* DC. was based on a misidentification of *L. speciosa* (Pers.) L. with *L. indica* L. and *L. grandiflora* Roxb. (species of *Duabanga*). In 1856 Blume excluded *L. speciosa* from the section or subgenus reserving it to *L. grandiflora* Roxb. only, see synonymy under *Adambea*.

**DISTRIBUTION:** India, North Burma and Eastern Himalayan regions, China and Japan.

**TYPE SPECIES:** *Lagerstroemia indica* L.

Subsection **Sibia**

Calyx ridges superficial, sometimes evanescent in the tube.

- 1a. Leaves oblong or obovate, sessile or almost so, not glaucous beneath. Flower-buds globose, 5–6 mm long, superficially ridged. Capsule about 10 mm long, 8 mm in diam., 4–6 valved ... *L. indica*
- 1b. Leaves often glaucous beneath, sessile or not, ovate or elliptic. Flower-buds much smaller, 2–3 mm in diam. Capsule 10–12 mm long or longer ... 2
- 2a. Leaves variable, distinctly petiolate, glabrous or pubescent beneath, elliptic, narrowed on both sides, up to 6 cm broad, broadest portion just below the middle. Fruiting calyx tube small, about 2 mm deep. Capsules 10–12 mm long, 6–8 mm in diam., 3–4 valved ... *L. microcarpa*
- 2b. Leaves variable, glabrous or downy beneath, sessile or subsessile, ellipsoid, oblong or ovate oblong, usually about 3 cm broad, rarely broader. Fruiting calyx tube 6–9 mm deep or longer. Capsule 1.3 mm long or longer, 1–1.5 cm in diam ... *L. parviflora*



1. *Lagerstroemia indica* L. Arn. Acad. IV (1759) 137, Syst. Pl. ed 10 (1760) 1076 & sp. Pl. ed 2 (1762) 732; Thunb., Fl. Jap. (1784) 224; Lour., Fl. Cochin (1790) 340; Curtis Bot. Mag. XII (1798) t. 405; DC in Mem. Soc. Helv. III (1826) 70 et Prodr. III (1828) 93; Wight, Ill. I (1840) t. 88; Voigt. Hort. Sub. Calc (1845) 131; Blanco. Fl. Filip. ed. 3 II (1878) 219 t. 207; Clarke in Hk. f., Brit. Ind. II (1879) 575; Koehne in Engl. Jahrb. IV (1883) 19 in Engl. Prantl. Pflanzenf. III, 7 (1891) 13 f. 5A-0 & Pflanzenr. 17 = IV 216 (1903) 259 fig. 55A-0.; Merr., Int. Rumph. Herb. Amb. (1918) 381; Lourteig, Fl. Parag. (1963) 17 t. VI. — **Fig. 1.**

A shrub. *Leaves* obovate or ovate-oblong, 5–7 nerved, 3–10 cm long, 2–4 cm broad, chartaceous, minutely pubescent on both sides when young, later glabrous above or almost so, sometimes pubescent along the midrib and the side nerves below; petiole subsessile about 1 mm long. *Panicle* subpyramidal with many or few-flowered, not condensed, 5–20 cm long, 7–20 cm broad, deciduously puberulous all over with angled branchlets. *Flower-bud* sub-globose, with a short nipple at apex, 5–6 mm long, 5–6 mm broad, 5–6 superficially ridged, ridges often evanescent in the upper half, variable in length of pedicelliform base (2–10 mm long). *Calyx* campanulate, 3–4 mm deep, 5–6 mm broad; lobes 4–6 erect, triangular, 3–4 mm long, annulate inside. *Petal* sub-orbicular  $\pm 11$  mm long (excluding  $\pm 7$  mm long claw),  $\pm 12$  mm broad, undulate and crispate in the margin. *Stamens* many, 4–6 stouter and longer, others subequal. *Ovary* subglobose, glabrous with a long slender style. *Fruiting calyx* funnel-shaped or cup-shaped with about 7 mm long pedicelliform base, often having a cavity-like at the sinus. *Capsule* variable in size  $\pm 10$  mm long,  $\pm 8$  mm in diam., 4–6 valved.

**DISTRIBUTION:** Himalayan Regions, China, Indochina and Japan, widely cultivated all over the world.

This species is very variable regarding the shape and size of the flowers and leaves, the colour of the petals, the hairiness of the leaves, so that many authors have attempted to separate varieties or forms. Thus Koehne (1883) have described two forms, *latifolia* and *angustifolia* on the width of the leaves, while Voigt has three varieties, *rosea*, *lilacina* and *alba*, on the colour of the petals. Other forms described in horticultural books have often been ignored. Koehne has discarded var. *pallida* Benth. as not being distinct.

Actually several cultivars can be separated using different characters, but for this purpose the type form described by Linnaeus has to be identified; or if it is merely based on Rumphian Herb. Amb. VII (1755) 61 t. 28, the cultivar of the latter will have to be established.

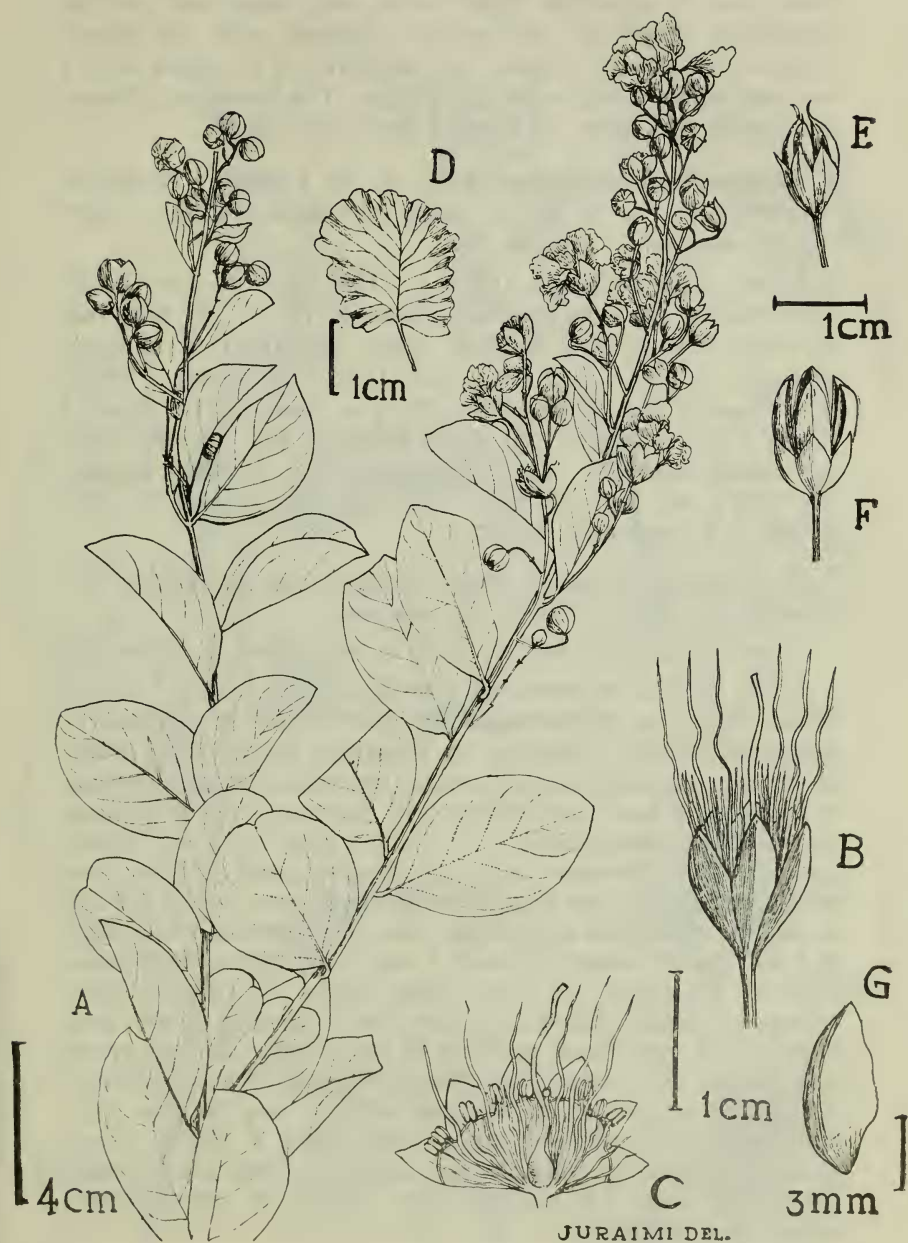


Fig. 1. *L. indica* Linn. (Forrest 6,580 in E.).

A, Fertile twig. B, Flower to show stamens. C, Longitudinal section of flower. D, Petal. E-F, Capsule. G, Seed.

Tsang 27,831 from Kwangsi, China, might be mistaken for a small flowered variety of *L. indica*, but the facts that its flower-buds show 12 superficial ridges in the early stages and that the episepalous ridges do not entirely disappear with the growth indicate that we are dealing with a hybrid of *L. indica* with a microcarpidium species with 12–14 ridges. The leaves are *glabrous* and sessile, and often are broader above the middle.

2. **Lagerstroemia microcarpa** Wight, Ic. Pl. I (1838) t. 69 obs. & (1839) t. 109 & Ill. Bot. I (1840) 206; Bedd., Fl. Sylv. (1869) t. 30; **stat. nov.** — **Figs. 2a, 2b.**

*L. lanceolata* Wall. Cat. (1828) n. 2120; Wight & Arn., Prodr. I (1834) 309 pp. *nom nudum*; Clarke in Hf. f., Fl. Brit. Ind. II (1879) 576; Koehne in Engl. Jahrb. IV (1883) 16 & Engl., Pflanzenr. 17 = IV. 216 (1903) 257; Cooke, Fl. Bomb. I (1903) 513; Brandis, Ind. Trees (1911) 338 p.p.; Gamble, Fl. Madr. I (1919) 513; Troup, Silv. Ind. Trees II (1921) 602; Gamble, Man. Ind. Timb. (1922) 372 (non. *L. lanceolata* Dalz. et Gibs., Bombay Fl., 1861 p. 98; Bedd. Fl. Sylv. 1869 t. 32; Brandis, For. Fl., 1874 p. 240 = *L. parviflora* Roxb.)

*L. thomsonii* Koehne in Engl. Pflanzenr. op. cit. (1903) 257; Gamble, Fl. Madr. I (1919) 513; **syn. nov.**

*L. parviflora* Roxb. var. *B.* Wight & Arn. Prodr. I. (1834) 308

A tree 10–15 m or more tall. *Leaves* 5–11 cm long, 2.5–6.0 cm broad, elliptic or elliptic-lanceolate, glabrous above, glabrous or pubescent beneath, acuminate or sometimes acute, rarely obtuse at the apex, gradually cuneate towards the base, sometimes oblique, 6–8 nerved on each side; petiole 3–10 mm long. *Panicle* terminal and axillary, sub-pyramidal, 10–35 cm long, 5–25 cm broad, minutely grey pubescent all over; flowers sessile. *Flower bud* subglobose about 2 mm long, 2 mm in diam., more or less callused at each sinus, nipped at the apex. *Calyx* campanulate 2 mm deep, 2–3 mm broad, borne on about 1 mm long, pedicelliform base; lobes 6, triangular, 1–1.5 mm long, patent or reflexed. *Petal* oblong or elliptic oblong, 4–5 mm long (including 1 mm long claw), 1.5–3 mm broad, undulate in the margin. *Stamens* many, 4–6 thicker and longer, the others sub-equal. *Ovary* glabrous, oblong or subglobose surmounted with a long slender style. *Fruiting calyx* cup-shaped about 2 mm deep, 5 mm in diam., brownish pubescent, lobes reflexed and often break out. *Capsule* 10–12 mm long, 6–8 mm in diam., elliptic or oblong-elliptic, usually 3–4 valved.

**INDIA: Konkan & North Kanara**, Yellapur (Bor 9,681: SING); Lahaghat (Rolla 69,717: BIP); Karjat (Fernandes 101: A); Lahgarh Hill (Jain 903: BIP; Raghavan 79,550: BIP); loc. incert. (Talbot 60: CAL; Young s.n.: BM); Goa (Kanodia 88,166, 88,423 & 89,655; BIP; Raghavan 103,369: BIP; Fernandes 1,365 & 1,622: A); Kumpta (Fernandes 177: A); Belgaum (Ritchie s.n.: E 277: E; Econ. Prod. file 162: CAL). **Western Ghats**, Mysore



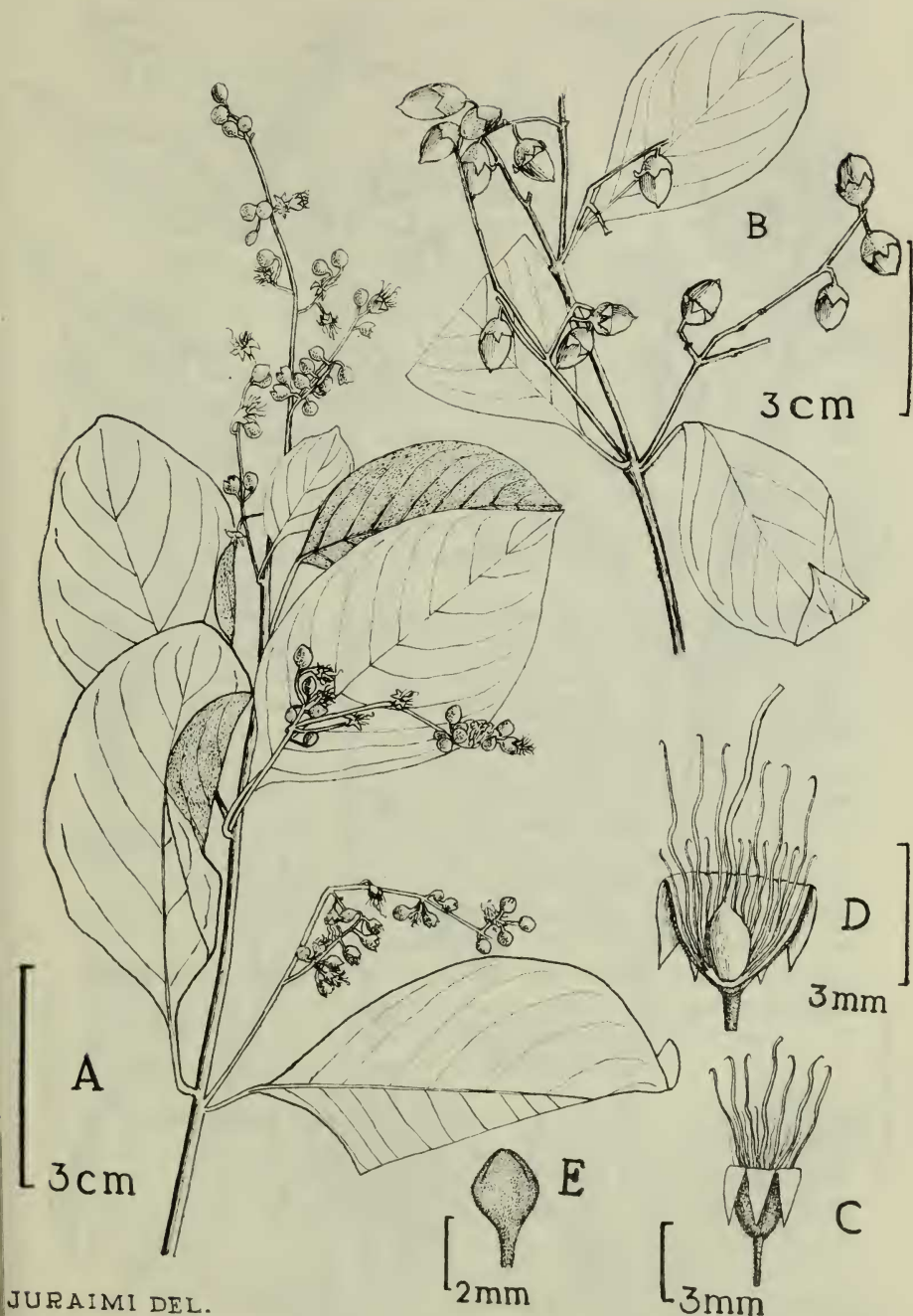
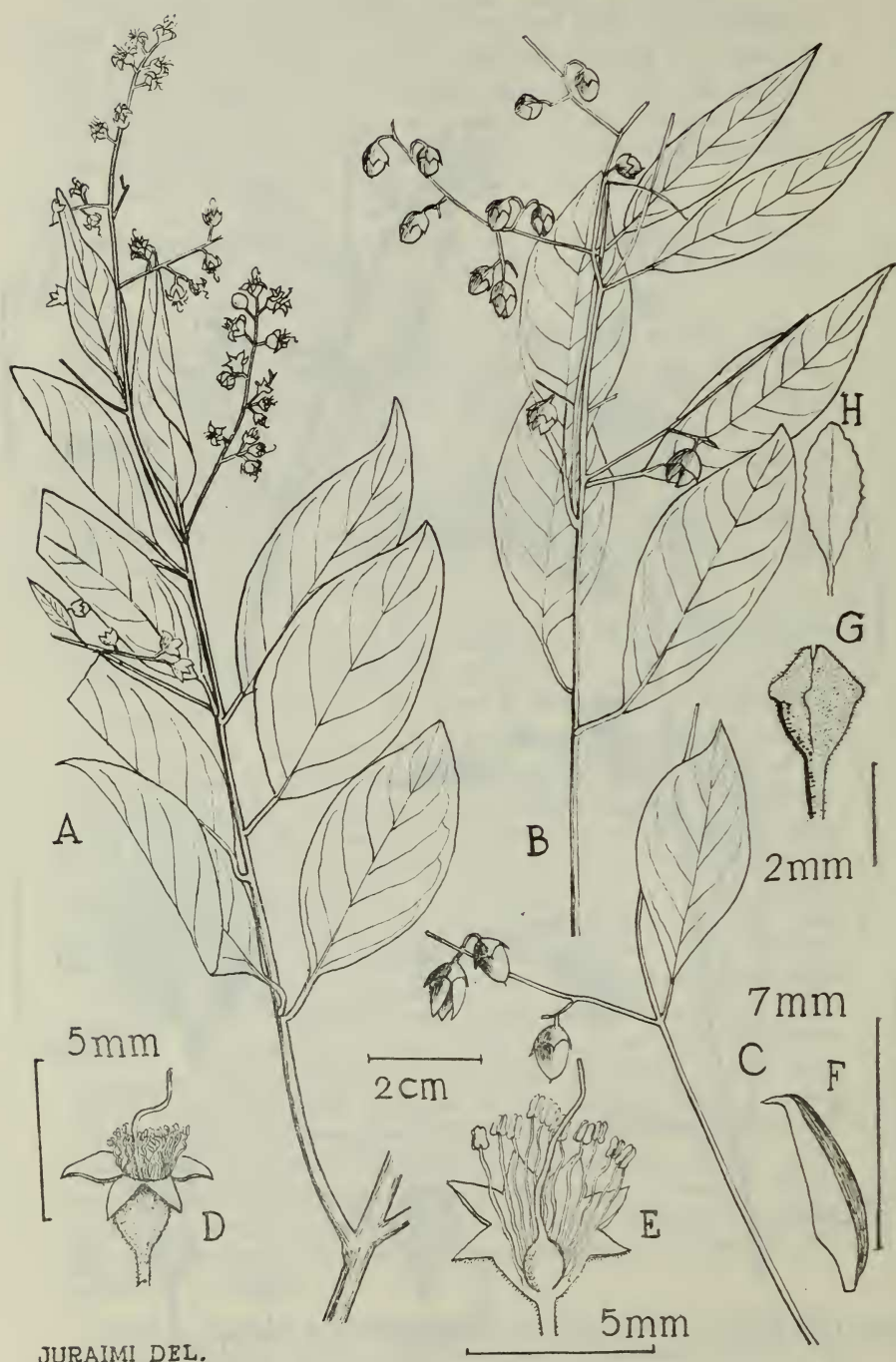


Fig. 2a. *L. microcarpa* Wight (Cleghorn 130: E).

A, Fertile twig. B, Twig with capsules. C, Flower after anthesis.  
D, Longitudinal section of flower. E, Flower bud.



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Fig. 2b. *L. microcarpa* Wight (Wight 275 in E & 1,035 = Wall. Cat. 2119—g. in E—holotype).

A, Fertile twig. B, Twig with capsules. C, Twig with mature capsules. D, Flower after anthesis. E, Longitudinal section of flower. F, Seed. G, Flower bud. H, Petal.

(Barber 7,079: CAL; Meebold 10,276: E; Raghavan 97,363: BIP; Mahajan 34,522: BIP; Thomson s.n.: **K-holotype** of *L. thomsonii*); Coimbatore (Fischer 2,027: CAL); Attapadi Hills (Fischer 2,775: CAL); Nilghiri (Gamble 18,353: BM; 15,371: K; & Thomson s.n.: G.H.); Courtallum (Wight 1035 = Wall. Cat. no. 2119-g: **E-holotype**; & 275: E & 299: E); loc. incert. (probably Courtallum: Wight Kew distr. no. 971: A, GH & K). **Malabar** Travancore (Calder & Ramaswami 651: CAL); loc. incert. (Stocks & Law: s.n.: E); Tenmalai in Kerala (Subramaniam 77,075: BIP).

In naming *L. microcarpa* (1838) Wight noted that it is his *L. parviflora* var. B from Courtallum only. He mentioned that the fruit is shorter than the calyx, which is seen in immature fruits, but his plate t. 106 depicts larger fruits. *L. lanceolata* Wall. was a *nomen nudum* in Wallich's Catalogue (1828) n. 2120 and was not validated until 1861 when Dalzell & Gibson (Bombay Fl. p. 98) applied it to a broader leafed form of *L. parviflora* Roxb., an interpretation upheld also by Beddome (Fl. Sylv. 1869 p. t. 32) & Brandis (For. Fl. 1874 & 1,240). This being the case *L. lanceolata* Wall. ex Clarke (1879) cannot be made a priorable name by rejecting the priority of *L. microcarpa* Wight. and ignoring an earlier homonym.

In old collections preserved in Kew and elsewhere one often finds two collections mounted on the same sheet. Thus Wight's collection distributed by Kew under Kew d. no. 971 (which are probably duplicates of Wight's Courtallum specimens number 299, collected in February 1836) is sometimes found mounted with a broad leafed specimens collected in Coorg in March 1852 by a different collector. Similarly Wight n. 1035 (holotype or isoholotype of *L. microcarpa* in Herb. E. is found mounted with another specimen which is probably Wight 1034 = *L. parviflora* Roxb.

The species is deciduous and one finds leaves varying in size, texture, colour and even indumentum so that there is no doubt that these are merely ecological forms. Leaves glabrous or tomentose beneath are found on the same tree and forest botanists (e.g. Beddome) who have studied the species in the field also, have noted these varying characters. Hence there is no reason to keep *L. thomsonii* as a good species.

3. *Lagerstroemia parviflora* Roxb., Pl. Cor. I (1795) 47 t. 66; DC., Prodr. III (1828) 93; Roxb., Fl. Ind. II (1832) 505; Don. Gen., Syst. II (1832) 724; Wight & Arn., Prodr. I (1834) 308 p.p.; Wight, Ic. Pl. I (1840) t. 69; Miq., Fl. Ind. Bat. I (1855) 622; Bedd., Fl. Sylv. I (1869) t. 31; Brand., For. Flor. (1874) 239; Kurz, For. Fl. Burma I (1877) 521; Clarke in Hook. f., Fl. Brit. Ind. II (1879) 575; Koehne in Engl., Jahrb. IV (1883) 17 & Engl., Pflanzenr. 17 = IV. 216 (1903) 258; Cooke, Fl. Bomb. I (1903) 512; Brand., Ind. Trees (1911) 338 — **Figs. 3a, 3b.**

*L. lanceolata* Wall. ex Dalz. & Gibbs., Bomb. Fl. (1861) 98; Bedd., Fl. Sylv. I (1869) t. 32; Brand., For. Fl. (1874) 240 (non *L. lanceolata* sec. Clarke) **syn. nov.**



*L. parviflora* var.  $\delta$  Wright & Arn., Prodr. I (1834) 308.

*L. parviflora* Roxb. var.  $\beta$  in Wight & Arn. loc. cit. (1834) 308 p.p.

*L. parviflora* var. *benghalensis* Clarke op. cit. II (1879) 576; **syn. nov.**

*L. parviflora* var. *majuscula* Clarke op. cit. p. 575.

*L. parviflora* Roxb. subsp. *nudinervis* Koehne op. cit. (1883) 18 & (1903) 259; **syn. nov.**

*L. parviflora* subsp. *pubinervis* Koehne op. cit. (1883) 18; **syn. nov.**

*L. parviflora* var. *napaulensis* (DC.) Koehne op. cit. (1903) 258; **syn. nov.**

*L. fatioa* Bl., Mus.-Lugd. Bat. II (1852) 125; **syn. nov.**

*Fatioa napaulensis* DC., Prodr. III (1828) 89 & in Mem. Soc.

Helv. I (1828) 97 t. 3; Don., Gen. Syst. II (1832) 717; **syn. nov.**

Type: INDIA: Coromandel: Circars (Roxburgh in E).

A tree. *Leaves* elliptic or ovoid or elliptic-oblong, 4–11 cm long, 3–5.2 cm broad, acute or obtuse at apex, rounded or obtuse or slightly decurrent when young at the base, often with undulate margin coriaceous, glabrous with minutely pubescent mid-rib above, whitish glaucous downy beneath, side nerves 6–8 on each side; petioles short or almost absent, often covered with whitish down, rounded, 0.1–0.4 cm long. *Inflorescence* panicate 5–20 cm long, with opposite cymes on branchlets; bracts leafy, elliptic-oblong; bracteoles 2; flowers pedicellate in two or three on each axillary peduncle on lateral branchlets; pedicels rather long, slender 0.5–1.5 cm long; buds globose without ribs, whitish puberulent, 2–3 cm in diam. *Calyx* cup-shaped glabrous inside, 4–7 mm long, without rib, minutely puberulent outside; lobes 6, triangular, shortly acuminate at apex, almost equal to the tube. *Petals* small, orbicular, deciduous 3.5 mm long with small slender claws 2 mm broad, undulate. *Stamens* many, inserted at the base of the calyx tube. *Ovary* globose, glabrous; style slender, 6–7 mm long, bent; stigma small. *Fruiting calyx* 6–9 mm long or larger, 1 cm in diam., minutely puberulent. *Capsule* oblong ellipsoid, coriaceous, glabrous, 1.5 cm long, 1 cm in diam.; sometimes larger exceeding 2.5 cm long and 1.5 cm in diam., stalks long 2.3–5 cm., rounded at apex.

INDIA: **Western India and Ghats:** loc. incert. (Watt's Coll: E); Kolaba (Vain 3,416: BSI); Senhagadh (Puri 9,258 BSI); Poona Hills (Coll. of Sc. Poona: E); Belgaum (Ritchie 949: E & GH & 949/6: E, & 276: E); Konkan and Malabar (Stocks et al. s.n.: GH; Nilgiri Hills (Wight 1,035 = Wall. Cat. 2119 h: E; Hooker

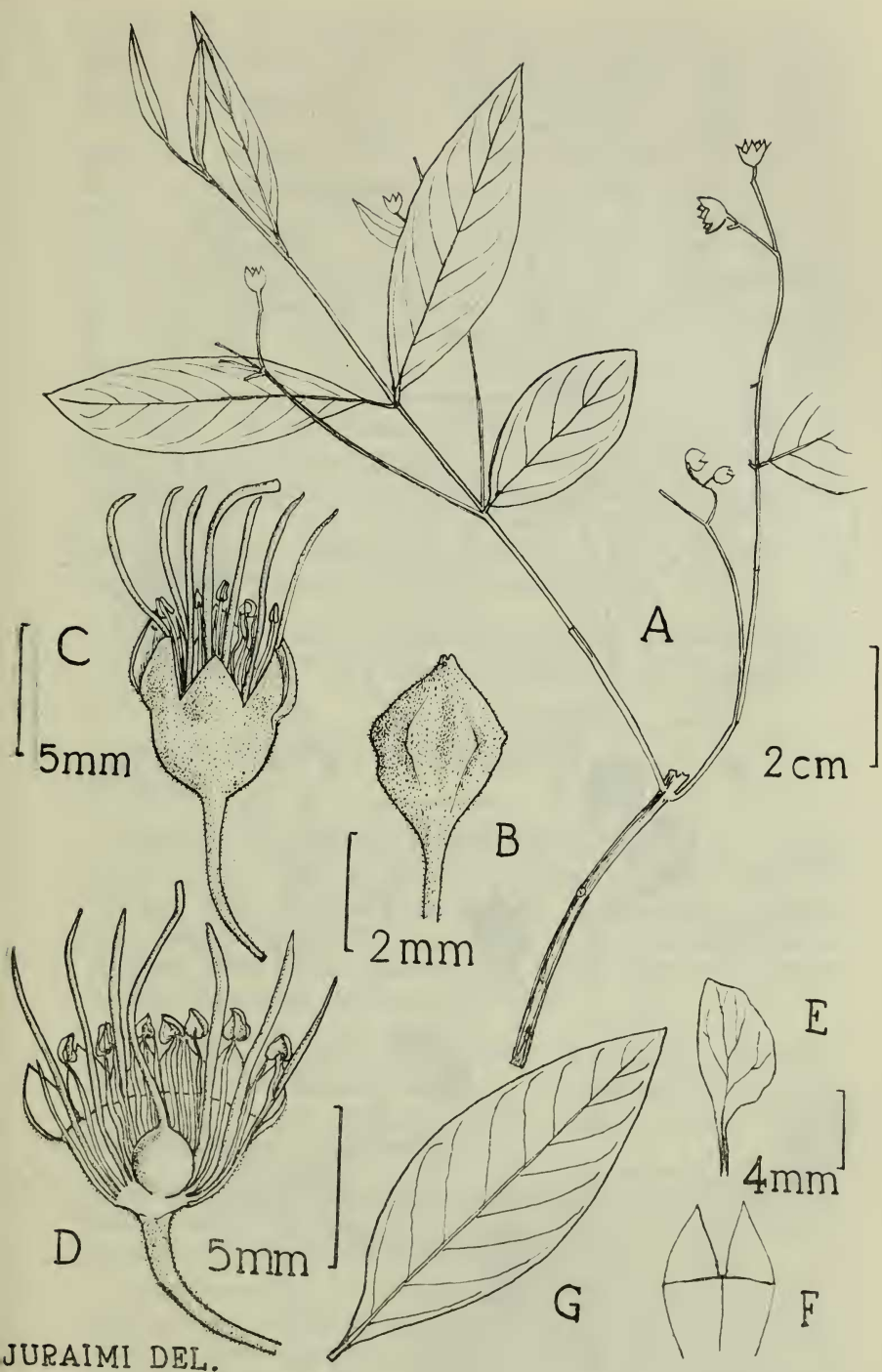
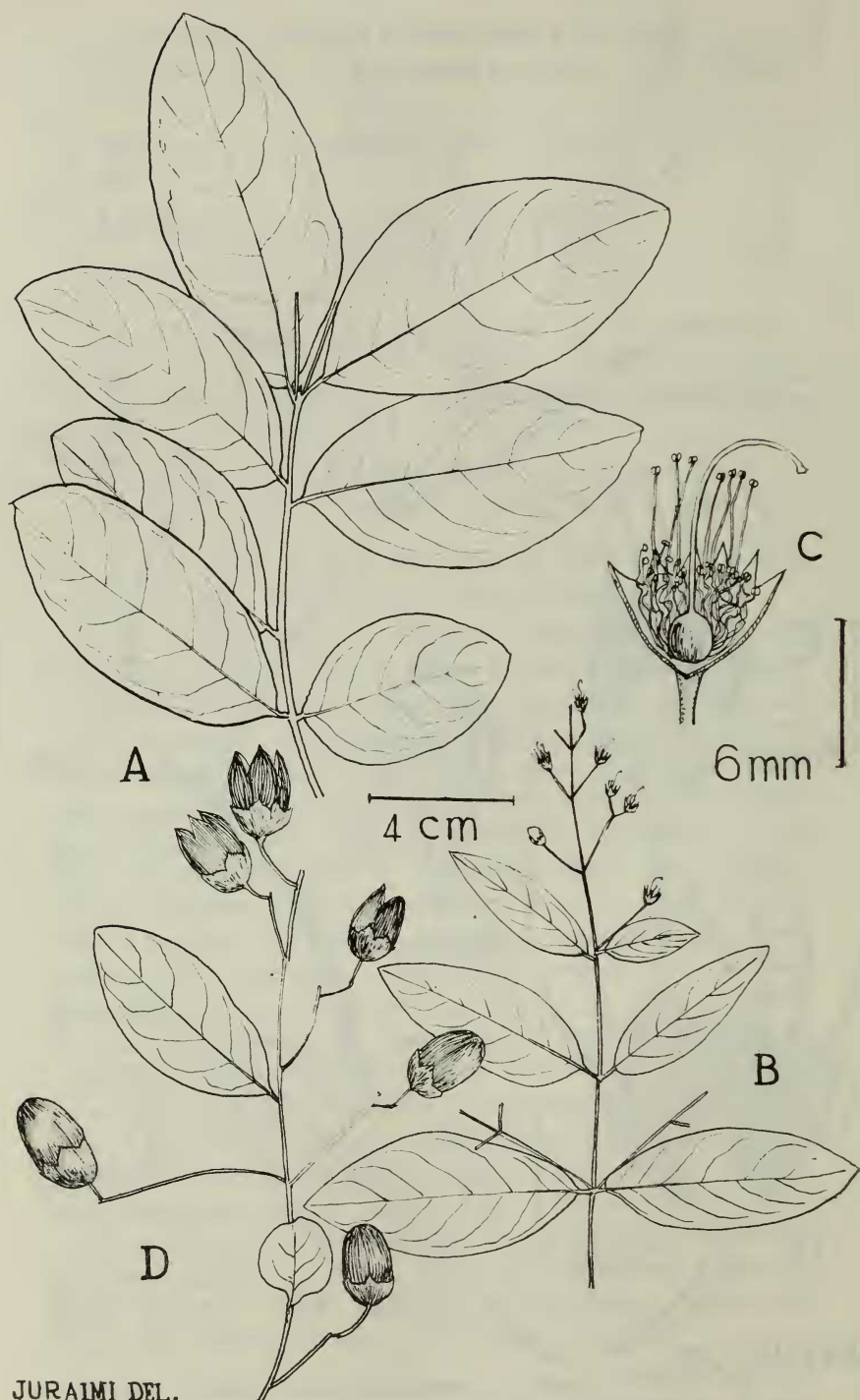


Fig. 3a. *L. parviflora* Roxb. (A: Roxburgh s.n in Circular: E; B — G; Roxburgh s.n.: E-holotype).

A, Fertile twig. B, Flower bud. C, Flower after anthesis. D, longitudinal section of flower. E, Petal. F, Part of calyx dissected. G, Leaf.



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Fig. 3b. *L. parviflora* Roxb. (Range Officer 3 in SING).

A, Twig. B, Fertile twig. C, Longitudinal section of flower. D, Twig with capsules.



s.n.: E, GH & A; Cleghorn in 1857: E; Thomson s.n.: CAL); Salem (Yeshoda 566: A & 154: B); Mysore (Rolla 73,457: BSI); Carnatic (Thomson s.n.: E); Droog (Cleghorn s.n.: E); Madras — Garden, Cult. Cleghorn: E). **North and Central India:** Sharanpur (McGollan 1,270: E); Berar (Wittenbaker et al. 11, & 13 & 23: E); Bampada (Hooper 38, 825: CAL); Oudh at Kheri (Inayal s.n.: E); Posserah (Campbell in May 1836: E); Pokhusia (Campbell = Watt's 8,406: E). **N.W. India:** (Stewart in 1871: E); Baulapilly (Campbell 402: E); Chota Nagpur (Clarke 25,072: E). **Andhra State North:** Godavari Distr. (Ramaswami 1,459: CAL); Kurnool Distr. (Gamble 17,697: CAL); Ganjam (Gamble 14,221: CAL); loc. incert. prob. Circar (Wight 968: GH; Roxburgh s.n.: E — **holotype** et Roxburgh per Wight s.n.: E; Wight 1,034: E). **Eastern Himalaya:** (India & Pakistan) loc. incert. (Lace 2,358: E; Hooker s.n.: GH); Nepal (Wallich s.n.: GH — **isoholotype** of *Fatiao nepalensis* apparently; Wallich 2,119. a: E; Wallich 2,119 b, from cultivated plants: GH); Sikkim, Khasya & Juntea (Prains Coll: E; Mann. s.n.: E; Gallatly s.n.: E); Kumaon (Strachey and Winterbottom 2,012: GH).

BURMA: loc. incert. (Dickason 6,152: A; Buchanan 107 & 77B: E; Lace 4,217: E; Forest: 9,178 & 9,648: E; Toppin 2,574: E & CAL).

SMALLEST FRUITS: Hort. Bot. Bogor cult. sub. No. VII D. 18 (SING).

LARGE FRUITS: **N. Bengal** (Biswas 1,628: A); **Nepal**, Talkot (Ram. 208: A & UC); Jajalkot (Polunin, Sykes & Williams 5,796: A). **West Coast of India**, Bombay State at Karjat (Fernandes 39 & 257: A); Goa (Raghavan 103,370: BSI). **Central & North India:** Behar (Watt 26: E); Indore (Rao 79,221: BSI); Andhra, Baulapilly (Wight 2,311: E).

LARGEST FRUITS & LEAVES LARGER, OBLONG, CORIACEOUS: **Bombay** at Kayat (Fernandes 39: A). **Goa:** (Raghavan 103,370: BSI); **Belgaum?** Dandelly (Ritchie 276/a: GH). **Aundrugah** (Prain: SING).

Leaves downy pubescent below especially on the midrib; at anthesis 13–65 mm long, later 35–118 mm long; calyx minutely puberulous; fruit smaller 15 mm long or less.

There are extremely few specimens that are entirely glabrous, and in some collections the different components of the same collection both pubescent and glabrous leafed specimens may be found in one and the same collection, a reason why Koehne cites the same numbers under both his subspecies. The holotype itself was described as being “covered with whitish down”, and the specimens marked above as an apparent holotype and Wight 968 are both pubescent beneath.

Kanjilal and his co-workers who studied Assamese plants including also from the mountainous regions stated that they could not recognise the varieties of Clarke since variations in the size of the fruits and in the pubescence or glabrescence of the leaves were noticed even in his area.

This species is widely distributed and it is known to accommodate itself to a variety of soils and even humidity, being intolerant of shade and waterlogging (cf. Troup, Sch. Ind. Trees II, 1921 p. 593); also it is a deciduous tree. Hence a great deal of variation it shows is probably a result of variations in the soil, climatic and growth conditions and probably also a response to some grades of shade. It is impossible to separate specimens on any one or more characters; though it is seen that the specimens from very high altitudes have leaves which are generally hairy underneath and a wavy or crispate margin. Also the fruits are generally smaller. The smallest fruit seen was in the specimen from a cultivated plant in the Gardens of Bogor, Indonesia.

### Subsection **Pterocalymma**

Subsection **Pterocalymma** (Turcz.) Furtado & Montien **stat nov**  
Secion *Pterocalymma* (Turcz.) Koehne in Engl. Jahrb IV (1883)  
22 & Engl.

Pflanzenr. 17 = IV. 216 (1903) 266 **isonym**.

Genus *Pterocalymma* Turcz. in Bull. Soc. Nat. Moscou XIX (1846)  
50 **basinym**.

Trees, occasionally shrubs. *Leaves* opposite or almost opposite, entire, generally short petioled, occasionally petiole as long as 2 cm. *Inflorescence* lateral or terminal panicles, pyramidal or cylindrical (with short lateral branches), often on long, sometimes on very short axis. *Flowers* generally showy. *Flower bud* subglobose, piriform or turbinate, smooth, grooved, ridged or winged, or merely auriculate or warted through the suppression of the ridges; lobes 6–9, deltoid, valvate in the bud, sometimes also mammillate. *Petals* 6 or more, inserted at the base of the sinus within, clawed, wrinkled within the bud. *Stamens* many, exsert, those opposed to sepals, few, larger and long, those opposite to petals, numerous, inserted in the tube above the base. *Ovary* sessile, 3–6 celled, style piliform, curved in the bud, longer than stamens; stigma terminal, capitate or nearly so; ovules many, axile. *Capsule* more or less, adnate to the calyx, ellipsoid, ovoid or globoss, dehiscent 3–6 valved. *Seed* many, elongate and winged.

**DISTRIBUTION:** From India, China and Japan southward to Malaysia, the Indonesian Archipelagos and North Australia, but absent from Ceylon.

The leaves on the lower half of the twigs are often small and of different shapes, sometimes even obovate or almost orbicular.

**TYPE SPECIES:** *Lagerstroemia paniculata* (Turcz.) Vidal.

## Key to the species

(Calyx with angular ridges or wings as many as sepals or sometimes provided with an auricle only at each sinus.)

- 1a. Ridges nearly absent or very slight in flower buds, but provided with a long auricle at each sinus ..... *L. venusta*.
- 1b. Ridges or wings prominent, straight or undulate or crispate in flower buds, at times also shortly auriculate ..... 2.
- 2a. Petals lanceolate, oblanceolate or elliptic, with the claw up to 6 mm long including cuneate claw ..... 3.
- 2b. Petals rounded or nearly rounded, with the claw 6–18 mm long ..... 4.
- 3a. Inflorescence 3–8 cm long, branchlets often in the axils of leaves; axis and calyx hirsutely grey pubescent. Petals lanceolate or elliptic 1.5–3 mm long, not with undulate margin. Leaves greenish grey, ovate 6–11 cm long, similarly hairy on both sides at first, later glabrescent with persistent pubescence on the midrib above and also on side nerves and reticulations below ..... *L. villosa*.
- 3b. Inflorescence long, with long basal branches provided with bracts or reduced leaves; axis and calyx minutely pubescent, dark yellowish brown, eventually becoming dark brown. Petals oblanceolate with sinuate margins, 4–6 mm long. Leaves elliptic 3–4 cm long, at first minutely hairy on both sides, later glabrous or puberulous on midrib ..... *L. subangulata*.
- 4a. Fruit over 19 mm long or more, 12 mm or more in diameter ..... 5.
- 4b. Fruit smaller, 12–18 mm long, 9–14 mm in diameter ..... 8.
- 5a. Leaves glabrous, epunctate or pustulate, greenish. Fruiting calyx ochraceous tomentose or puberulous green with 6 non-sinuate ridges ..... 6.
- 5b. Leaves dark, punctate, pubescent especially on the lateral nerves and midrib beneath. Fruiting calyx dark, minutely white puberulous, 6–9 ridged in the same inflorescence (ridges sinuate especially at the base, sepals patent). Fruit elliptic or ovate-elliptic 23 mm long, 14 mm in diameter, rounded or slightly apiculate at apex or not ..... *L. ovalifolia*.
  - (a) Capsule apiculate ..... var. *ovalifolia*.
  - (b) Capsule blunt ..... var. *exapiculata*.
- 6a. Fruit 19 mm long, 12–14 mm in diameter with its calyx lobes reflexed. Leaves concolorous, 7–10 cm long; petiole  $\pm$  1.5 mm long ..... *L. subsessilifolia*.
- 6b. Fruit larger with calyx lobes patent or erect over 19 mm long. Leaves paler beneath; petiole 4–10 mm long ..... 7.
- 7a. Fruit 25 mm long, 20–22 mm in diameter. Leaves pustulate 12 cm–17 cm long, 7 cm broad; petiole 5–10 mm long. Calyx pustulate, minutely pubescent, grey, dirty brown in fruit ..... *L. pustulata* (San. 2006).
- 7b. Fruit 19–23 mm long, 17–20 mm in diameter. Leaves not pustulate, 10–14 cm long, 3–5.4 cm broad; petiole 4 mm long. Fruiting calyx ochraceous tomentose, not pustulate ..... *L. quinquevalvis*.
- 8a. Calyx ridges slightly sinuate crispate or not in tube, not auriculate at the sinus ..... 12.
- 8b. Calyx ridges crispate or crispate undulate, even above the sinuses also, auriculate like at the sinus ..... 9.
- 9a. Leaves glabrous above, glabrescent and dotted beneath when adult 11.
- 9b. Leaves hairy on both sides, not dotted beneath, hairs persistent on the nerves ..... 10.



- 10b. Leaves 6–10 cm long, 2.5–4.5 cm broad, shining above. Calyx ridges almost orbicularly and undulately auriculate at the sinus, abruptly narrowed into thickened bands on both sides of the sutures of the sepals in the bud above ..... *L. undulata*.
- 10b. Leaves 6–10 cm long, 2.5–4.5 cm broad, shining above. Calyx ridges in the bud broadly auriculate and crispate at the sinus, gradually narrowed along both sides of the suture above ..... *L. crispa*.
- 11a. Calyx ridge in the bud enlarged at the sinus and then gradually narrowed along the suture toward the bud-apex. Leaves dull above, greenish brown beneath, 8–17 cm long, 3–7 cm broad, lanceolate or oblong-elliptic, 8–11 nerved. Petiole 5–10 mm long. Petal oblong, 6–7 mm long, 3–4 mm broad ..... *L. paniculata*.
- 11b. Calyx ridges not auriculate at the sinus convexly dilated along the sutures of the flower bud. Leaves shining above, light or greyish green beneath, elliptic or obovate elliptic, 5–8 cm long, 2.5–5 cm broad, 5–7 nerved. Petiole 1–3 mm long. Petal rhomboid, 11 mm long, 9 mm broad ..... *L. pterosepala*.
- 12a. Leaves reddish beneath, elliptic, acute or obtuse, rarely lanceolate and caudate ..... 13.
- 12b. Leaves greenish on both sides, often lanceolate, long acuminate or caudate. Fruiting calyx abruptly narrowed into a long base ..... 19.
- 13a. Fruiting calyx abruptly narrowed into a long base ..... 18.
- 13b. Fruiting calyx gradually narrowed towards the base or abruptly into a very short base ..... 14.
- 14a. Fruiting calyx lobes conspicuously winged along the margins, wings folded backwards. (Flower bud with raised sutures) ..... 15.
- 14b. Fruiting calyx lobes slightly thickened along the margins, not conspicuously winged. (Flower bud ridges not conspicuously raised along sutures) ..... 16.
- 15a. Fruiting calyx almost obconical. Capsule almost flat at top, rostrate with 1.5 mm long beak. Leaves ovate or oblong, obtuse or obtusely acute, 6–9 cm long, 3–7 cm broad ..... *L. ovalifolia* var. *minor*.
- 15b. Fruiting calyx often elongated into a pedicelliform base. Capsule oblong or subglobose, 12–14 mm long, with a beak about 0.5 mm long. Leaves elliptic, oblong, 3–7 cm long, 2–4 cm broad, smaller ones obovate or almost orbicular ..... *L. ovalifolia* var. *novoguineensis*.
- 16a. Calyx wings fall off very early in the development of the fruit so as to make the ridges straight in fruiting calyx. (Capsule apparently curvedly narrowed towards the apex, shortly nipped.) Calyx obconical ..... *L. ovalifolia* var. *ruptilis*.
- 16b. Calyx ridges otherwise ..... 17.
- 17a. Fruiting calyx obconical, slightly elongated at base. Ridges of flower buds slightly undulate. (Capsule with 1–2 mm long beak) ..... *L. ovalifolia* var. *riedeliana*.
- 17b. Fruiting calyx almost cupular with short abruptly pedicelliform base. Ridges of the flower buds straight. (Capsule with 2 mm long beak) ..... *L. ovalifolia* var. *apiculata*.
- 18a. Fruiting calyx lobes reflexed. Leaves coriaceous ..... *L. crassifolia*.
- 18b. Fruiting calyx lobes erect. Leaves chartaceous ..... *L. borneensis*.
- 19a. Calyx ridges raised along the sutures in the bud ..... 20.
- 19b. Calyx ridges not raised or almost obscure along the sutures in the bud ..... 21.
- 20a. Flower bud club shaped, excluding the pedicelliform base, the tubular portion almost equal to cupola. Ridges in the bud slightly desinent at the sinus, but raised and sulcate along the suture below the apex ..... *L. cristata*.
- 20b. Flower bud turbinate, the tube almost twice as long as the cupola; ridges raised at the sinus along the suture ..... *L. inopinata*.



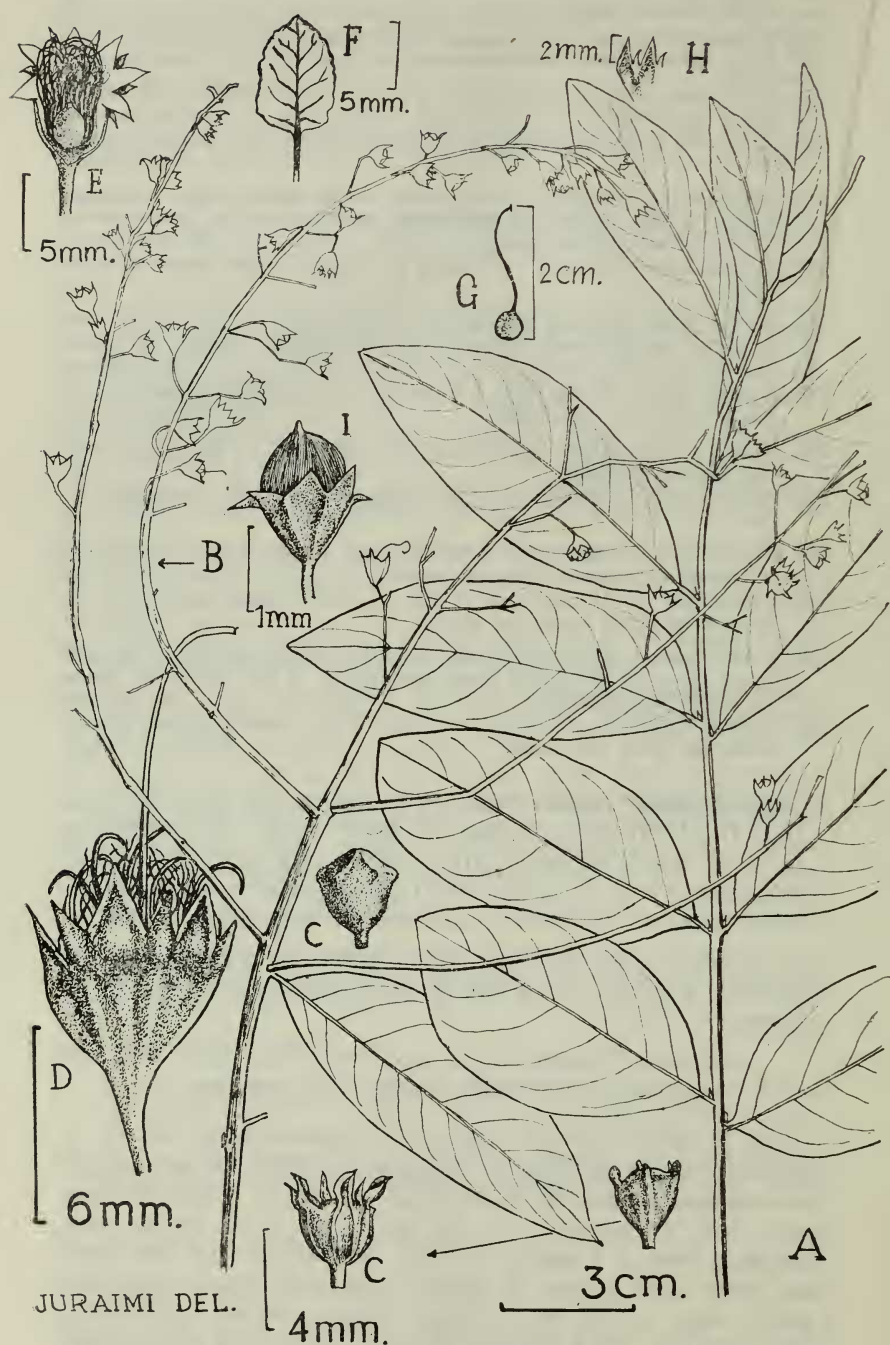
- 21a. Ridges in calyx bud sinuate in the tube, gibbose at the sinus, desinent in the sutures above ..... 22.
- 21b. Ridges in the calyx not sinuate in the tube and not gibbose at the sinus, almost absent in the sutures ..... 23.
- 22a. Calyx bud, ridges abruptly gibbose at the sinus, desinent and sulcate along the sutures ..... *L. aruensis*.
- 22b. Calyx bud ridges broadened at the sinus, desinent and sulcate towards the apex ..... *L. alatulata*.
- 23a. Inflorescence cylindrical, with short, almost equal lateral branches. Ridge in the calyx bud elliptically areolate at the sinus above (obscurely mammillate bud) ..... *L. moluccana*.
- 23b. Inflorescence pyramidal or almost so. Ridge in the calyx bud not areolate ..... 24
- 24a. Flower buds including pedicelliform base about 15 mm long, 7 mm in diam., conspicuously apiculate, ridges winged; pedicels of lateral flowers  $\pm$  5 mm long ..... *L. Koehneana*.
- 24b. Flower buds 8–12 mm long, 5–6 mm in diam., shortly nipped or not; ridges slight or superficial ..... (*L. piriformis*) — 25.
- 25a. Ridges of the flower bud obscure or superficial in the calyx tube; bud slightly apiculate ..... 26.
- 25b. Flower bud apiculate or not; ridges somewhat prominent in tube ..... 27.
- 26a. Flower bud 9–12 mm long, 5 mm in diam. Ridges distinctly thickened and obscurely sulcate along the suture ..... forma *piriformis*.
- 26b. Flower bud 10–11 mm long, 6 mm in diam., ridges broadly sulcate but not thickened along the suture ..... var. *valleculata*.
- 27a. Flower buds 9 mm long, 6 mm in diam., ridges completely desinent below the sinus in mature buds, reappearing in the suture just below the apex, not thickened ..... var. *callosa*.
- 27b. Flower buds 8–9 mm, 5 mm in diam., ridges prominent and slightly thickened along the suture ..... forma *batitanan*.

4. *Lagerstroemia venusta* Wall. ex Clarke in Hook. f., Fl. Brit. Ind. II (1879) 576; Koehne in Engl. Jahrb. IV (1883) 26, in Engl. Prantl, Pflanzenf. III. 7 (1891) 14 f. 5 Y, & in Engl., Pflanzenr. 17 = IV. 216 (1903) 269 fig. 55 Y; Craib in Fl. Siam Enum. I, (1931) 720 sub observ. *L. collettii* — **Fig. 4.**

*L. collettii* Craib in Kew Bull. (1911) 53; Gapnep. in Fl. Indochine II (1921) 960; Craib in Fl. Siam Enum. I (1931) 720; **syn. nov.**

*L. corniculata* Gagnep. in H. Lec. Not. Syst. III (1918) 357 and in Fl. Indochine II (1921) 943 fig. 101. **syn. nov.**

Tree or shrub. *Leaves* oblong or elliptic-oblong, obtuse or sometimes nearly rounded at the apex, undulate in the margin, thin coriaceous, whitish puberulous on nerves beneath when young, later glabrescent, 4–15 cm long, 2.5–5.8 cm broad, often oblique at base, 5–9 nerved on each side; petiole 3–6 mm long, buds often light brown in colour when dry, short, triangular. *Panicle* large up to 45 cm long, diffuse, whitish puberulous, pedicel short  $\pm$  4 mm long and unequal. *Flower bud* campanulate abruptly narrowed into the base, about 9 mm long, 6 mm in diam., whitish puberulous, raised and furrowed, provided with a liguliform auricle at each sinus, smooth in tubes sometimes more or less 6 ridged, ridges straight. *Calyx* campanulate, lobes 6, acute. *Petals* clawed, short oblong, 9 mm long (including 2–3 mm



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FIG. 4. *L. venusta* Wall. ex Clark (A-B Talbot de Malahide 45 in SING; C-H Royer 499 in E; I Lace 5,414 in E).

A, Twig. B, Inflorescence. C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Petal. G, Ovary with style. H, Part of calyx. I, Capsule.

long claw), obtuse at the apex, undulate in the margin. *Stamens* many, 6–8 thicker and longer, others subequal. *Ovary* glabrous, globose with a long slender style, capitate stigma. *Fruiting calyx* cuneate abruptly narrowed into a short pedicelliform base, ridgeless or sometimes distinctly ridged; lobes 6, alternating with liguliform auricles or their bases at the sinus, thickened in the margin, reflexed or porrect.

CHINA: **Yunnan** (Wang 80, 430: A).

BURMA: **Upper Burma**; Wetwun near Maymyo (Lace 6,249: CAL, E); **Upper Chindwin**; Kalewa (Lace 4,192: E — isoparatype of *L. colletti*); Yindaw (Collett 857: E — isoparatype of *L. collettii*); Myingyan near Popayura (Rogers 499: E). **Shan States**, Thondong (Lace 5,385 on 30. VII. 1911: CAL & E; 5,415: E & Batin 12,152: E; Forest Ranger or Lace 5,414 on 9. IX. 1911: CAL & E).

THAILAND: *Northern*: **Chiengmai** (Kerr 1,264: BM — holotype of *L. collettii*); **Lampang**, Che Hom (Kerr 4,796: UC); Prae, Hui Che (Vanpruk 320 = BKF 5,153: BKF). *South-Western*: **Kanburi** (Kostermans 1,115: A, 1,150A: A; Marcan 894: BM). *North-Eastern*: **Nakon Phanom**, Mukdahan (Lakshnakara 962: BM).

INDO-CHINA, LAOS & CAMBODIA: Mekong bank (Talbot de Malahide 45: BM, SING); Paksan Road (Talbot de Malahide 63: BM, SING); Stung-Streng (Thorel 2,162: BM — isosyntype of *L. corniculata*).

The holotype of the species was collected near Thayet Moo on the Irrawaddy river in Burma, from which region we have seen some collections, but they generally bear ridged calyces, but sometimes ridgeless or almost ridgeless calyces in flower buds and fruit (e.g. Rogers 499) are found even in the same specimens as described in the protolog of the species. A great deal of variation is also seen in the leaves depending upon the new or old shoots. Hence we have no hesitation in reducing *L. collettii* to this species.

5. ***Lagerstroemia villosa*** Wall. ex Kurz in Journ. As. Soc. Bengal XVII, 2 (1873) 234, Pegu For. Rept. Append. B (1875) 54 in Journ. cit. XLVI (1877) 88, For. Fl. Burm. I (1877) 524; Clarke in Hook. f., Fl. Brit. Ind. II (1879) 578; Koehne in Engl. Jahrb. IV (1883) 27 & in Engl. Pflanzenr. 17-IV. 216 (1903) 269 fig. 58; Craib in Kew Bull. (1911) 54; Gagn. in Fl. Indochine II (1921) 947; Craib, Fl. Siam. Enum. I (1931) 728. — **Fig. 5.**

*L. villosa* Kurz var. *sparsior* Craib in op. cit. (1931) 729 **syn. nov.**

*L. tomentosa* sec. Hoss. in Bot. Centralbl. Beih. XXVIII, 2 (1911) 416 pro parte.

A tree about 20 m high. *Leaves* lanceolate 6–11 cm long, 3–4 cm broad, ovate 2.5–6 cm long, 2–3 cm broad, acuminate or acute at the apex, slightly decurrent into the petiole, densely whitish puberulous on both surfaces when young, later hairy in the midrib and side nerves above, puberulous beneath and pilose along the nerves, usually bicolourous green but sometimes brownish, 5–8 nerved on each side; petiole 3–5 mm long. *Panicle* terminal, cylindrical or subpyramidal, 3–8 cm long, 3–4 cm broad, densely white puberulous. *Flower bud* white puberulous, turbinate suddenly narrowed toward the base, about 4 mm long (including 1–2 mm long pedicelliform base), 2 mm in diam., 4–6 ridged, undulately winged up to the sinus, very slightly ridged along the suture with an obscure apex. *Calyx* 5–6 mm long (including 2 mm long pedicelliform base), 4–5 mm in diam.; lobes 4–6, 2 mm long, triangular, not or slightly thickened along the margin, patent or slightly reflexed. *Petal* lanceolate or elliptic, 1.5–3 mm long, 0.5–1 mm broad. *Stamen* many, 3–6 thicker and longer filamented, others shorter, subequal. *Ovary* subglobose with about 10 mm long slender style. *Fruiting calyx* cup-shaped, 3 mm deep, 8–9 mm in diam., adpressed to the fruit with ridges straight, not decurrent into the base; lobes reflexed, brittle. *Fruit* elliptic 15–22 mm long, 11 mm in diam., 3–4 valved.

CHINA: **Yunnan** (Wang 74,687: A).

BURMA: *Upper Burma*: **Maymyo** Plateau, Thondaung (Lace 6,211: E); Sakangyi (Lace 5,954: E); Katha, Gahe to Indaw (Lace 4,442: E); loc. incert. (Prazer 21: A, E, SING); Shan States, Taungi (Abdul Khalil s.n.: CAL); Lashis (Lace 5,834: E); Bawgys (Lace 4,837: E); Keng Tung (MacGregor 698 bis: E). **Mandalay**, Sedaw (Lace 5,794: CAL, E). **Namkhok State**, Namkhok (Dickason 8,287: SING). **Pyinmana**, Kaing (Lace 4,544: E). **Thayetmyo**, Taungyan (Lace 2,680: E). **Pegu & Tharrawaddy**: Pegu (Kurz 1,973: BM & CAL — **lectoparatypes**; Pegu Yama (Kurz 1,343: CAL — **lectoholotype**; Scott s.n.: GH, E); Meaday (Hamilton s.n.: BM); Kangyi (Lace 5,704: CAL, E).

THAILAND: *Northern*: **Mae Haung Sorn**, Kun-Yuam Noi (Kerr s.n.: BM & UC). **Chiangmai**, Maung Fang (Garrett 173: E; Hosseus 616: BM, E); Chiangmai to Chiengrai (Rock 1,626: A); Doi Sutep (Kerr 1,150: BM; Chermisrivathana 509: SING). **Kampang Pet** (Kerr 5,969: BM, E, UC): between Kampang Pet. & Raheng (Kerr 2,614: E). **Uthaithani**, Banrai (Kasem 361: SING). *South-Western*: **Kanburi**, Wangka (Kerr 10,461: E — **isoholotype** of var. *sparsior*); Kwai Noi river at Bangkasi (Hoed & Kostermans 689: A). *North-Eastern*: **Loie**, Sitan (Smitinand 4,867: A).

This species is easily distinguished from *L. tomentosa* by its indumentum which is of simple hairs, while the latter has stellate hairs. It is obvious that Clarke had not seen either Kurz's original description or his syntypes.



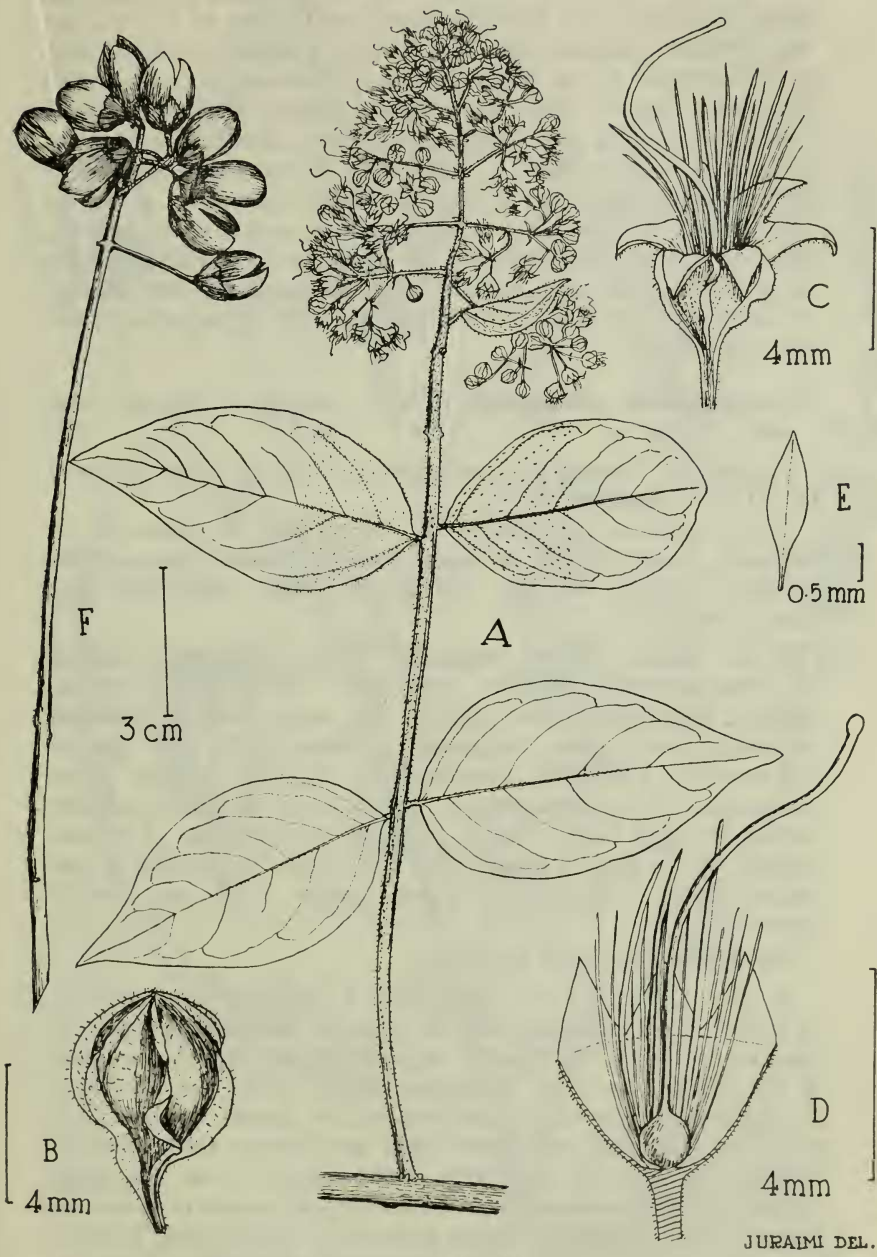


Fig. 5. *L. villosa* Wall. (A-E: Lace 6,211 in E; F: Lace 5,704 in E).  
A. Fertile twig. B. Flower bud. C. Flower after anthesis. D. Longitudinal section of flower E, Petal. F, Twig with capsules.

We have reduced Craib's var. *sparsior* to the type variety because the specimens from the type region produce glabrescent leaves and the fruits are about the size described by Kurz and found in Kurz 1,343. Kurz described the capsule as 4–6 valvate, but 3-valvate capsules are also found, 4-valved capsules seem to be common in the Pegu and the Tharrawaddy regions. We have seen smaller fruits from North Burma and much larger fruits from Burma and Thailand, but they cannot be said to be typical. The leaves shed a good deal of indumentum as they become older and even acquire brownish colouration as in the type of var. *sparsior*. To us the problem seems to be more a result of ecology than heredity. If some varietal distinctions are to be made on the size capsules, then the specimens with smaller or larger capsules than in the lectotypes could be separated from the type form.

6. *Lagerstroemia subangulata* (Craib) Furtado et Montien stat. nov. — Fig. 6.

*L. undulata* Koehne var. *subangulata* Craib, Fl. Siam. Enum. I (1931) 727: **basinum**.

A *L. undulata* cui affinissima, calycis alis in alabastro vix undulatis, haud crispatis, ad sinum haud auriculatis, secus suturas sulcatas margine elevatas undulatulas, foliis minoribus haec species recedit.

*Folia*: lamina 5–8 cm longa, 2.5–3.5 cm lata, ovato elliptica vel elongato-ovato elliptica, utrinsecus 7–9 nervata, primum utrinque pubescens, dein glabra vel secus costam puberula reticulationibus supra depressis; petiolus 1–3 mm longus. *Inflorescentia* axe fusco brunnescentis, ut calyx minute griseo-pubescentis. *Petala* oblanceolata, basin versus attenuata, margine sinuata, 4–6 mm longa. *Fructus* ellipticus vel oblongus, 15–18 mm longus, 10–12 mm in diam.; calyx 6-alatus, in tubo 5–6 mm longus; lobis triangularibus apice acutis, 2–2.5 mm longis, patentibus.

**Holotypus**: Kerr 7,018 (non vidi).

A tree. *Leaves* 5–8 cm long, 2.5–3.5 cm broad, ovate-elliptic or elliptic, often acuminate with an acute or obtuse apex, curvedly narrowed towards the shortly angustate base, slightly undulate in the margin, hairy on both sides when young, later glabrous or glabrescent especially along the midrib, dotted beneath; 7–9 nerves on each side; reticulation sunk and obscure above, distinct beneath; petiole 1–3 mm long. *Inflorescence* 10–40 cm long, minutely greyish white pubescent all over, on a dark or brownish surface, lateral branches curved upwards, 5–25 cm long. *Flowers* congested at the top of short dichotomous peduncles borne on short, simple or subdivided branches on primary axis or lateral branches, often axillary to the bracts or reduced leaves. *Petals* oblanceolate or lanceolate 4–7 mm long (including  $\pm$  2 mm long claw), 2–3 mm broad, undulate in margin; pedicel sessile or up to 2 mm long. *Calyx* 6-hardly undulate ridges, 5–6 mm long, 4 mm broad; lobes 6, acute at the apex, spreading or slightly

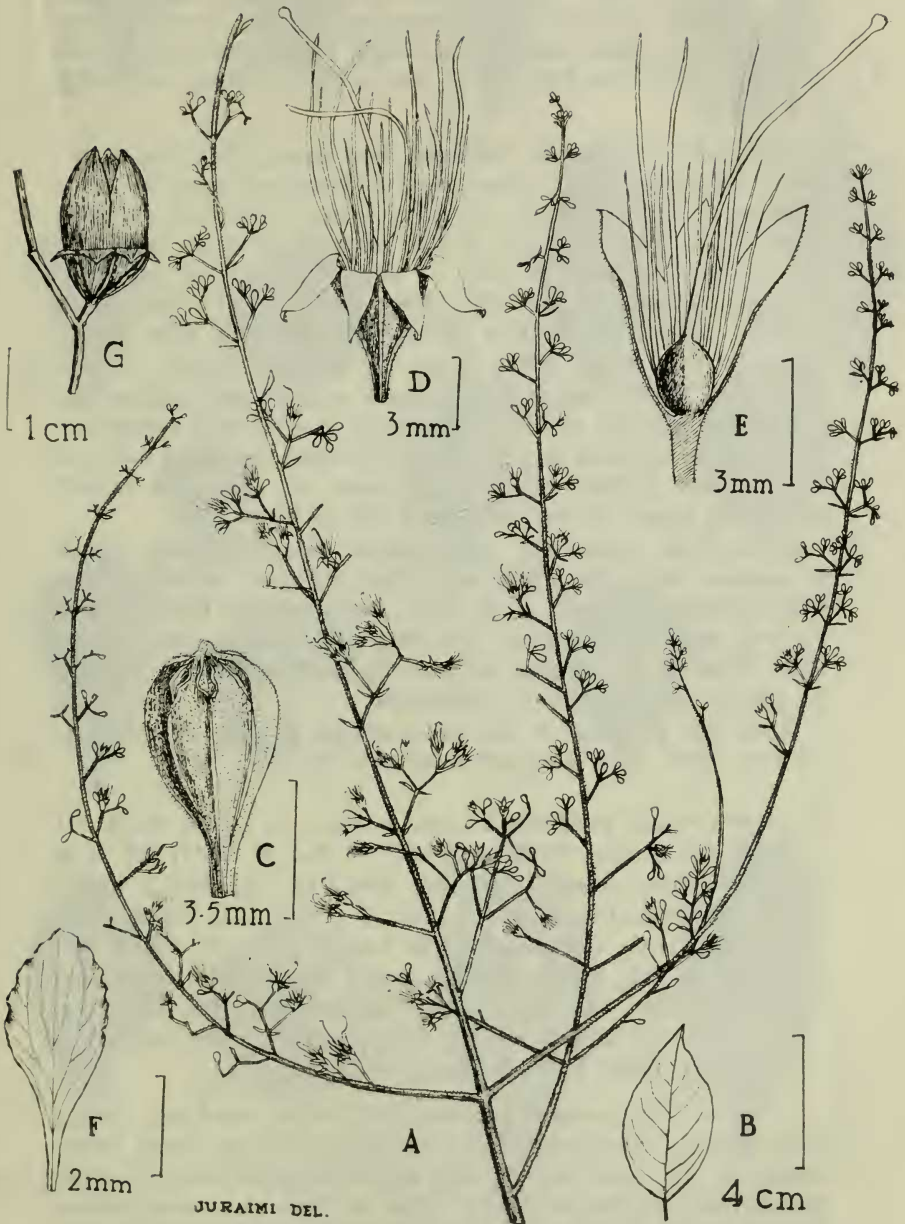


Fig. 6. *L. subangulata* (Craib). (A-F: King 5,497 in GH; G: Put 1,148 in BM).

A, Inflorescence. B, Leaf. C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Petal. G, Capsule.

reflexed, sparsely puberulous in the upper parts within. *Flower bud* turbinate or almost so, 5–7 mm long, 3 mm in diam., furrowed and raised along the suture, shortly nipped at the apex. *Stamen* many, unequal with 6 longer and thicker. *Ovary* oblong. *Fruiting calyx* slightly undulate in ridges; lobes spreading. *Capsule* glabrous, 15–18 mm long, 10–12 mm in diam., elliptic or oblong, 3–4 valved.

**THAILAND:** *Central:* **Saraburi**, Ban Nawng Bua (Put 1,148: BM — **isoparatype**, E. — **paratype** of the basynym). *South-Western:* **Kanburi**, Kanburi 7 kms northwest (King 5,497: GH & UC); Wang Kanai (Marcan 2,210: BM — **isoparatype** of the basynym); loc. incert. (Marcan 898: BM — **isoparatype** of the basynym); Ta-salao (Marcan 2,503: BM; Kerr 19,484 & 19,484a: BM). *Eastern:* **Korat** (= Nakhon Rachasima); Bua Yai (Put 4,288: BM, E); loc. incert. (Pong Sono 16 = BKF 23,586: SING).

In Kerr 19,484a the fruits are much smaller and dehisce into 2–4 valves, but this we think is a result of ecological conditions. The fruits in this also vary in size, the smallest one being 6–7 mm long, almost globose, while larger ones on the same branch are oblong about 12 mm long and 9 mm in diam.

In its leaf characters this species resembles very much *L. undulata* which has a bud with broad and much undulate wings which become auriculate at the sinus, and which has thick margins on both sides of the suture. The bud in *L. subangulata*, on the other hand, is less winged and scarcely undulate and so it might be placed very close to *L. paniculata*.

Since the protolog is not sufficient to identify this species, we have given here a longer description in Latin.

7. **Lagerstroemia ovalifolia** Teysm. et Binn. in Kruid, Arch. III (1840) 410. in Nat. Tydschr. Nederl. — Ind. II (1851) 306 & in Fl. Nov. Hort. Bogor (1866) 29: Miq., Fl. Ind. Bat. I (1855) 624; Bl., Mus. Bot. Lugd. — Bat. II (1856) 127; Walp., Ann. Bot. IV (1857) 690; Koehne in Engl. Jahrb. IV (1883) 24; Koord. et Val., Bijdr. Booms. Java I (1894) 193; King, Mat. Fl. Mal. Pen. III (1898) 352; Koehne in Engl. Pflanzenr. 17 = IV. 216. (1903) 268 fig. 58A; Gagnep. in Fl. Indoch. II (1921) 945; Ridl., Fl. Mal. Pen. I (1922) 662.

A big tree with spreading crown, 15–20 m or more tall. *Leaves* ovate, oblong or obovate, 6–11 cm long, 4–5.6 cm broad (often smaller in the lower part of twigs about 2.5–6 cm long, 1.7–4 cm broad), sub-rounded, acute or obtuse at both ends, chartaceous, glabrescent or minutely pubescent on nerves and midrib on both surfaces, greenish or grey above, brown and densely black dotted below, 5–9 nerved on each side; petiole up to 5 mm. *Panicle* terminal, pyramidal or subcylindrical, 6–36 cm long, 10–25 cm broad, few flowered, grey puberulous all over; pedicels unequal, 5–10 mm long. *Flower bud* turbinate or clavellate, 8–15 mm long, 9–10 mm in diam., ridges 6–9, broadly winged, undulate or not, raised and undulate or almost absent along the suture, with a



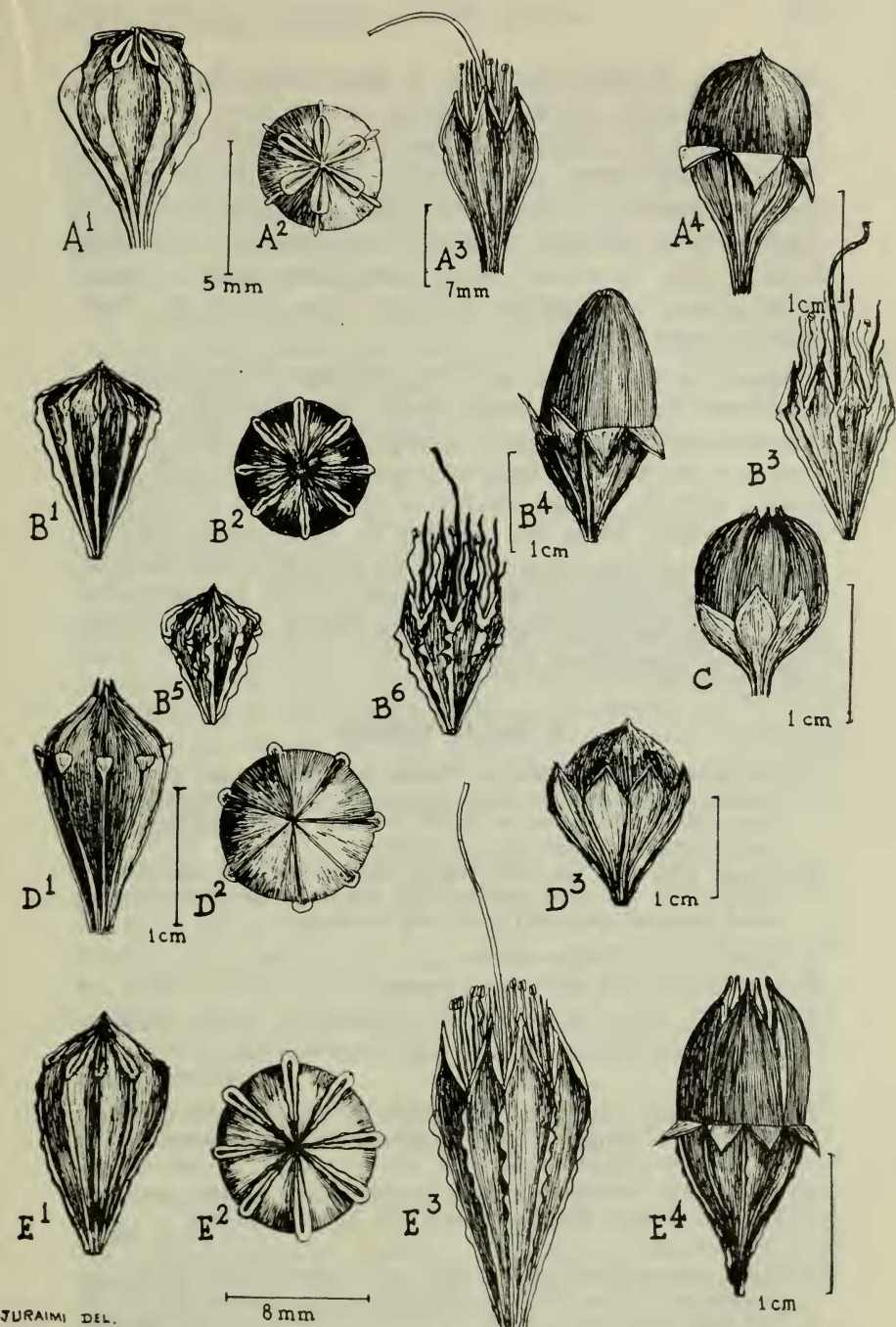


Fig. 7. *L. ovalifolia* varieties: var *novoguineensis* (A<sup>1</sup>–A<sup>3</sup>: Schram 6,068: LAE—holotype, & A<sup>4</sup>: Iwagin 5,661: SING); var. *exapiculata* (B<sup>1</sup>–B<sup>3</sup>: Mat Nong 4,025: SING & B<sup>4</sup>: Burkill & Haniff 17,179: SING—holotype, & B<sup>5</sup>–B<sup>6</sup>: Toroes 2,473: SING); var. *minor* (C: Iboet 64: SING); var. *ruptilis* (D<sup>1</sup>–D<sup>3</sup>: Lakshnakara 836: BM—holotype); var. *ovalifolia* (E<sup>1</sup>–E<sup>3</sup>: Kurz s.n. ex Hort. Bogor.: CAL & E<sup>4</sup>: Koorders 4,411B: CAL).

A<sup>1</sup>–A<sup>2</sup>, Flower bud. A<sup>3</sup>, Flower after anthesis. A<sup>4</sup>, Capsule. B<sup>1</sup>–B<sup>2</sup>, B<sup>5</sup>, Flower bud. B<sup>3</sup>, B<sup>6</sup>, Flower after anthesis. B<sup>4</sup>, Capsule. C, Capsule. D<sup>1</sup>–D<sup>2</sup>, Flower bud. D<sup>3</sup>, Capsule. E<sup>1</sup>–E<sup>2</sup>, Flower bud. E<sup>3</sup>, Flower after anthesis. E<sup>4</sup>, Capsule.

short up to 1 mm long nipple at apex. *Calyx* funnel-shaped; lobes 6–9, acutely triangular, winged or not along the margin outside. *Petal* 6–9, orbicular 15 mm long (including 5 mm long claw), 10 mm broad, membranous, undulate in the margin. *Stamens* numerous 6–9 longer and thicker, others many, subequal. *Ovary* globose, glabrous, adnate to the calyx-tube at the base. *Fruiting calyx* persistent, thick, hard; lobes patent. *Capsule* elliptic-oblong, or subglobose 14–25 mm long, 13–16 mm diam., shortly nipped or blunt.

Some of the varieties e.g. *apiculata*, *riedeliana* and *novoguineensis* have flower-buds which might justify the separation of these taxa as quite distinct from *L. ovalifolia*, but we have retained them here because they have to be studied further which is not possible with the limited number of specimens at our disposal. Generally these forms are referred to *L. ovalifolia* since no distinction had been found between the different forms. Koorders 26,924<sup>B</sup> from Banjoemas in Java probably also belongs to this group which has to be separated from true *L. ovalifolia* forms; it has very small flower buds.

### A Key to Varieties

- 1a. Flower buds 12 mm long or longer, 9–10 mm broad, with ridges sinuate or plicate in the tube, gibbose at the sinus. (Fruiting calyx obconical in tube, acute or slightly truncate at base, gibbose at the sinus). Capsule 15 mm long or longer ..... 2.
- 1b. Flower buds 8–10 mm long, slightly alate in the tube and with the exception of var. *novoguineensis*, not gibbose at the sinus. (Fruiting calyx different). Capsule 15 mm long or shorter ..... 5.
- 2a. Capsule 19 mm long or longer ..... 3.
- 2b. Capsule about 15 mm long or shorter ..... 4.
- 3a. Capsule apiculate. Flower buds 12–13 mm long ..... var. *ovalifolia*.
- 3b. Capsule not apiculate. Flower buds 13–15 mm long ..... var. *exapiculata*.
- 4a. Fruiting calyx wings fall off and make its ridges straight; sepals not winged in the margins. Capsule apparently curvedly narrowed towards the apex, shortly nipped ..... var. *ruptilis*.
- 4b. Calyx wings persistent, sinuate, sepals winged. Capsule somewhat flattened at apex, abruptly rostrate into 2 mm long beak..... var. *minor*.
- 5a. Calyx straight ridged, even in fruit, not winged, in fruit almost cup-shaped with a short abruptly pedicelliform base. Capsule with 2 mm long beak. (Sepals not winged) ..... var. *apiculata*.
- 5b. Calyx sinuately ridged in the tube and evanescent above or broadly alate at the sinus and above. Fruiting calyx gradually narrowed at base. Capsule shortly beaked ..... 6.
- 6a. Ridges in flower-buds sinuate, not broadly winged at the sinus or above. Fruiting calyx obconically elongate at base, sepals not winged ..... var. *riedeliana*.
- 6b. Ridges in flower-buds broadly winged at the sinus, desinent above, but winged and raised near the apex. Fruiting calyx gradually elongate at base, sepals winged ..... var. *novoguineensis*.

**7a. *Lagerstroemia ovalifolia* T. & B. var. *ovalifolia* — Fig. 7E.**

*L. ovalifolia* T. & B. in Kruid., Arch. III (1840) 410, in Nat. Tydschr. Ned. Ind. II (1851) 306 et in Pl. Nov. Bogor (1866) 29; Miq., Fl. Ind. Bat. I (1855) 624; Bl. Mus. Bat. Lugd. — Bat. II (1856) 127; Walp; Ann. Bot. IV (1857) 690; Koord. et Val., Bijdr. Booms. Java I (1894) 193 et vers. Flor. Cel. (1898) 469 pp. et autt. supra cit. pro parte.

*L. hexaptera* Miq. sec. Koorders, ex Kurz Fl. Java II (1912) 662 pp. et Atlas Baum. Java IV (1918) tab. 783 fig. I & K pp.

*Flower buds* 12–13 mm long, 9–10 mm broad, turbinate, 7–9 broadly ridged, ridges rugose and denticulate, raised and sulcate above the sinus along the sutures. *Fruiting calyx* with rugose or sinuate ridges. *Capsule* 20–24 mm long, beaked.

INDONESIA: **Java**, loc. incert. (Koorders 4,411<sup>B</sup>: CAL); Bogor Gardens (Kurz sn.: CAL).

According to Miquel (1855) and Blume (1856) the type of the species was from Bantam in Java, but the actual description was based on a specimen collected from a plant grown in the Botanic Gardens, Bogor, whence Kurz later collected a specimen, now preserved in the Calcutta Herbarium. Koorders and Valeton (1894) stated that the species occurs in Java almost exclusively in the Preanger and the Bantam districts of West Java, while Koorders (1912) later noted that it does not occur in Central and East Java.

However, there are reasons to believe that at least two forms of *L. ovalifolia* occur in West Java. The one represented by the fruits on Koorders 4,411<sup>B</sup> (CAL) and flowers in Kurz s.n. (CAL) which have their calyx ridges somewhat toothed and the sutures sulcate and rugosely raised along the margins in buds. In fact a stamp in Koorders 4,411<sup>B</sup> indicates that the specimen was compared with the authentic specimens in Bogor by Koorders and Valeton.

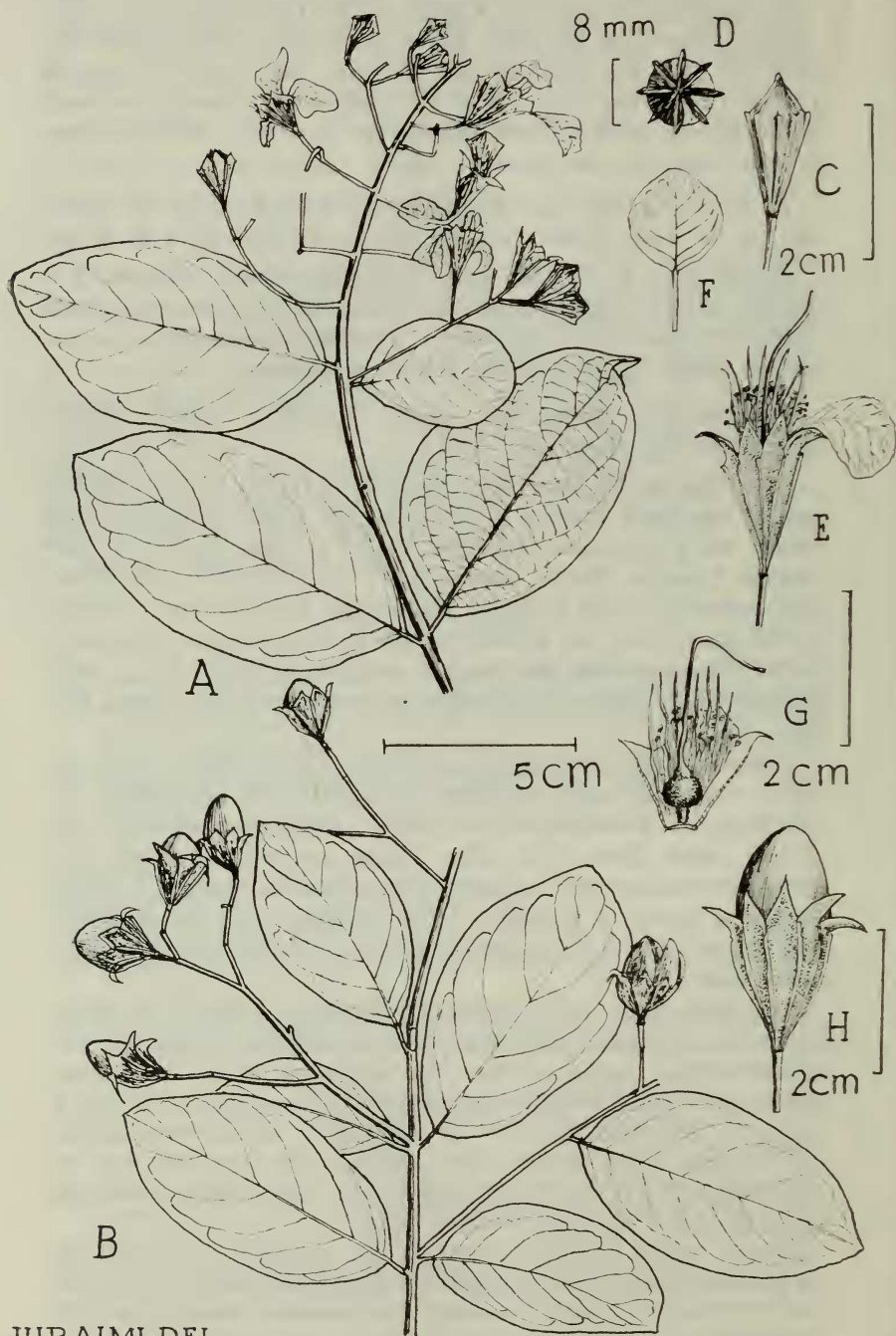
The other form is represented by Koorders 29,924<sup>B</sup>, the small flower buds which unlike the buds of the first form, do not reveal winged ridges in the tube and winged sulcate sutures above the sinus. The fruit in Koorders' Atlas (1918) t. 783 fig. I under *L. hexaptera* Miq. (= *L. ovalifolia* T. & B.) has straight, not toothed, ridges in the calyx, and has not elongated base as in Koorders 4,411<sup>B</sup> and so it may be the fruit of the same form represented by the small flowers.

If so it would probably represent var. *apiculata*. Unfortunately we have not been able to consult the Bogor Herbarium specimens and to typify *L. ovalifolia* except on Koorders' description and specimens.

**7b. *Lagerstroemia ovalifolia* T. & B. var. *exapiculata* Furtado et Montien — Fig. 7B and Fig. 8.**

*L. hexaptera* Miq. *sensu* Clarke in Hk. f., Fl. Br. Ind. II (1879) 577 quoad specimina malayana.





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Fig. 8. *L. ovalifolia* var. *exapiculata* (A-H Bidin 6,541 in SING).

A, Fertile twig. B, twig with capsules. C-D, Flower bud. E, Flower. F, Petal. G, Longitudinal of flower. H, A capsule.



*L. ovalifolia* T. & B. *sensu* King Mal. Fl. Pen. III (1898) 352; Ridl., Fl. Mal. Pen. I (1922) 662; Craib, Fl. Siam Enum. I (1931) 725; quoad specimena malayana tantum.

Inter varietates *L. ovalifoliae* cum floribus capsulisque maximis ponenda sed capsulis elliptico-ovoideus, exapiculatis ad 24 mm longis, alabastris ad 15 mm longis haec varietas sat distincta.

**Holotypus:** MALAYA: **Pahang**, Kuala Lipis (Burkill & Haniff 17,179: SING).

This variety has the largest flower buds (13–15 mm long) and the largest capsules (22–24 mm long), but unlike the other varieties the capsules here are blunt.

THAILAND: **Pattani**, Betong (Kerr 7,487: BM, E, UC).

MALAYA: **Langkawi**, Gunong Raya (Chew 171: SING; Idris 33,173: SING). **Perak**, Ulu Bubong (King 10,025: CAL, KEP, SING, UC); Ulu Kerling (Kunstler 8,701: CAL). **Pahang**, Kuantan (Sohar 4,189: SING); Kuala Lipis (Burkill & Haniff 17,179: SING — **holotype:** Mat Nong 4,025: SING); Ulu Sikin (Bidin 6,541: SING); Kuala Tahan (Ridley 2,640: CAL, SING); Sungei Triang (Mohamed 29,980: SING); Bentong (Spewewinde s.n.: SING); Kuantan, Ulu Sikin (Bidin 6,535: SING). **Selangor**, Kepong (Osman 18,244: SING); Sungei Buloh (Sow & Tachun 16,901: KEP); Kanching (Strugnell 12,778: KEP, SING); Kepong cult. (Soo 73,538: SING). **Malacca** Brisu (Derry 1,050: SING). **Negri Sembilan**, Linggi (Usope 0586: SING). **Johore**, Mawai (Ngadiman 34,738: A, SING, & Corner s.n.: SING).

INDONESIA: **Sumatra**, Sigamata (Toroes 2,985: A, SING & UC); Langa Pajoeng (Toroes 3,565: A & UC); Aer Kandis (Toroes 2,473: A, SING, UC & 2,508: A & UC); Asahan at Boenvet (Yates 748: A & UC; 2,101: BM & UC; 1,759: UC).

Most of the Sumatran specimens cited here are in flower and we have not had ample material to see if flower buds of this variety can be distinguished from those of the type form. However, we have cited all the specimens here because the specimens which had young fruits and no nipple at apex. Since all these specimens are from a small region on the east coast of Sumatra, we have ventured to refer all the specimens to this variety.

7c. *Lagerstroemia ovalifolia* T. & B. var. **ruptilis** Furtado et Montien — **Fig. 7D.**

*L. ovalifolia* T. & B. *sensu* Gagn. in Fl. Ind. II (1961) 945 p.p.; Craib, Fl. Siam Enum. I (1931) 725 p.p.; Pham et Nguyen, Flor. Vietn. (1960) 350 tab. 126 fig. F. quoad specimena indochinensia.

Inter varietates cum capsulis ad 15 mm longis ponenda, sed haec varietas alabastris 8-alatis, circa 15 mm longis, 9 mm in diam., alis rectis mox ruptis, ad sinum gibberosis, secus suturas paulo alatis vel non; capsulis immaturis, apicem versus curvato angustatis, summo breviter apiculatis; sepalis calycis fructiferi non vel breviter alatis, costis in tubo rectis sat distincta.

**Holotypus:** THAILAND: **Toh Moh**, Ban Kamung (Lakshnakara 836: BM).

This variety is distinguished by its flower buds being conical, 8 ridged, 15 mm long, 9 mm broad, with straight wings gradually broadened towards the sinus, where it is conspicuously humped, practically absent along the sutures; the wings fall off so as to make the fruiting calyx straight ridged; sepals not winged along the margin. (Capsule immature, beaked).

THAILAND: **Toh Moh**, Ban Kamung (Lakshnakara 836: BM — **holotype**).

INDOCHINA: **Cochinchina**: Dinh Mountains (Pierre 1,512: A); Thuya-Thyen (Pierre 174: GH).

In the Flora of Vietnam, Pham-Hoang Ho & Nguyen-van-Duong quotes *L. ovalifolia* with a query mark and depicts flower-bud or calyx with straight ridges.

7d. **Lagerstroemia ovalifolia** T. & B. var. **minor** Furtado et Montien — **Fig. 7C**.

*L. ovalifolia* T. & B. *sensu* Ridl. in Kew Bull. (1926) 66.

A var *ovalifolia*, cui alabastris similibus, subequilongis eodemmodo alatis ut videtur, haec varietas capsulis brevioribus (circa 15 mm longis), apice applanatis, summo longe (2 mm) rostratis, foliis latoribus differt.

(Calyx alis persistentibus, sinuatis, interdum basin versus denticulatis, ad sinum gibbosis praeditus, sepalis margine alatis).

**Holotypus:** Mentawi Archipelago: insula Siberut (Boden-Kloss 12,300: SING).

*Fruiting calyx* funnel-shaped, 10–11 mm long, 12–15 mm broad, 6–8 ridges undulate, broader and often denticulate in the lower half, gibbose at the sinus; lobes 6–8, patent, narrowly winged along the rim. *Fruit* light brown, short oblong, 13–15 mm long, 11–13 mm in diam., obscurely angular, somewhat flattened at apex, provided with about 2 mm long nipple, usually 5-valved.

INDONESIA: **Mentawi Archipelago** (West of Sumatra) Island of Siberut, Boden-Kloss 12,300: SING — **holotype**; BM & UC — **isoholotypes**; Iboet 64: SING).

This variety seems to have flower-buds that resemble those of the type form in length and in the wings of the ridges which are here 6–8, but the capsules are much shorter, somewhat flattened at apex with about 2 mm long beak. The leaves are also broader.

7e. **Lagerstroemia ovalifolia** T. & B. var. **apiculata** Furtado et Montien — **Fig. 9**.

Inter varietatis *L. ovalifoliae* cum alabastris capsulisque minoribus ponenda sed alabastris ad sinum haud gibbosis, costis 6 rectis vix alatis; calycibus fructiferis recte costatis fere cupularibus, basi breviter et abrupte pedicellatis, ejusdem sepalis margine haud alatis; capsulis apicem versus convexo angustatis summo rostratis, rostro 2 mm longo haec varietas facile distinguenda.

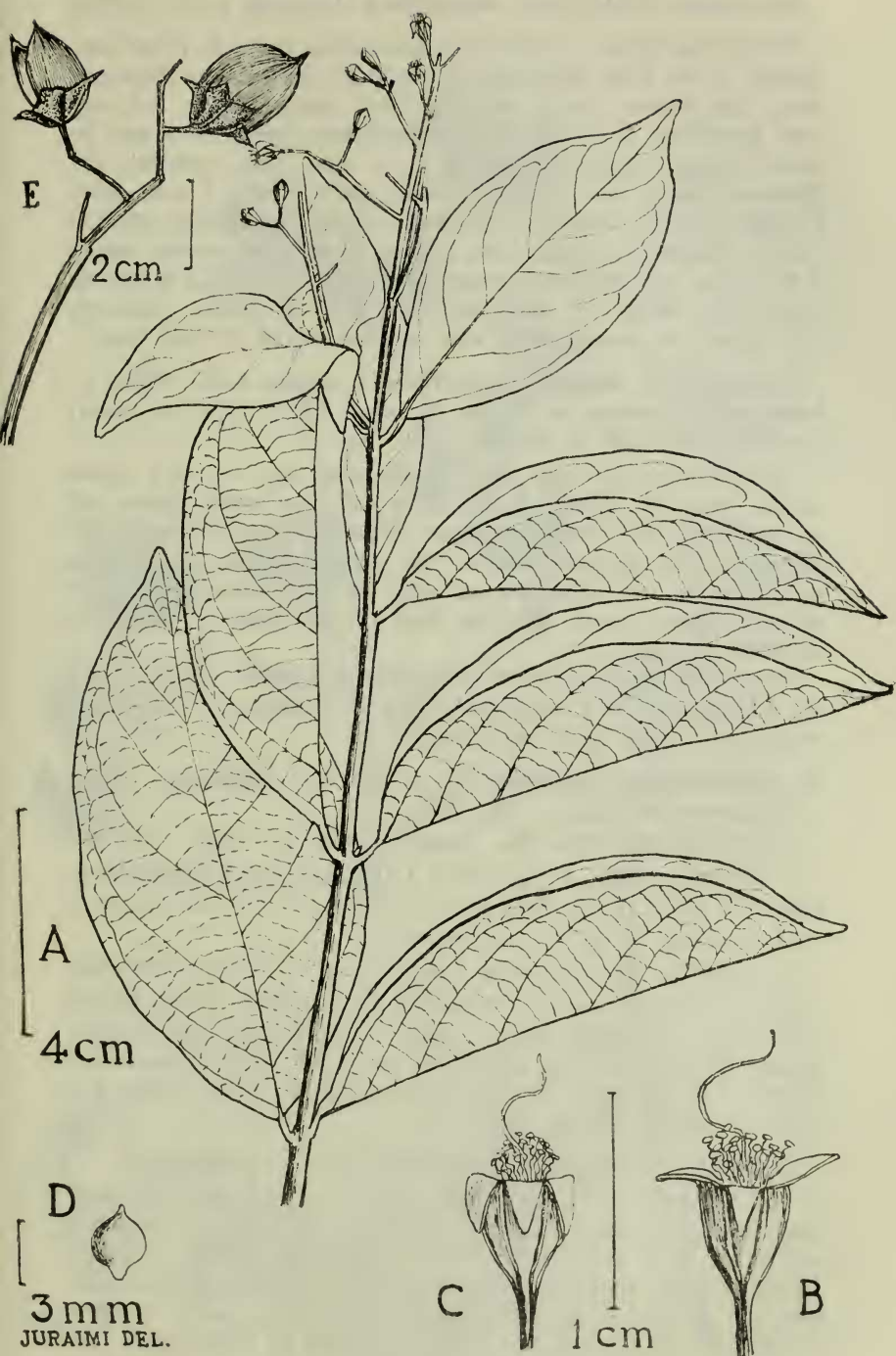


Fig. 9. *L. ovalifolia* T. & B. var. *apiculata* (A-D: Loerzing 6,407: SING — holotype; E: Forbes 2,705: SING).

A, Fertile twig. B-C, Flower after anthesis. D, ovary. E, Twig with capsules.



**Holotypus:** SUMATRA: **Bandarbaru** (Loerzing 6,407: SING).

*Flower bud* about 5 mm long, 3 mm broad; ridges 6, prominent, straight in the tube, obscurely furrowed at the top, not thickened along the suture, shortly nipped. *Calyx* campanulate, 7–8 mm long (including 2–3 mm long pedicelliform base), 4–5 mm in diam., straight ridged; lobes 6, 2–2.5 mm long, reflexed, not thickened along the margin. *Fruiting calyx* about 8 mm deep, 11 mm in diam., broadly obconical, almost cup-shaped, straight ridged, abruptly narrowed into a short base, lobes patent, about 5 mm long, not thickened along the margin. *Capsule* 5–6 valved, subglobose about 15 mm long, 13 mm in diam., obscurely 5–6 angled in cross-section with a beak about 2 mm long.

INDONESIA: **Sumatra**, Bandarbaru (Loerzing 6,407: SING — **holotype**), Palembang at Rawas (Grashoff 1,092: UC); loc. incert (Forbes 2,705; GH & SING).

The holotype specimen has flowers only, but its calyx shows readily how it differs from those of the other forms of *L. ovalifolia*. The fruit has been described from Forbes 2,705 (SING). With the exception of the straight ridges, the fruiting specimens of var. *apiculata* are easy to be confused with that of var. *minor*, except that the fruit of the latter is somewhat flattened at apex.

This form appears to be very like Koorders' Atlas t. 783 fig. I, described as *L. hexaptera* Miq. & Koorders 29,924<sup>B</sup> with very small flower buds may also be it.

7f. **Lagerstroemia ovalifolia** T. & B. var. **riedeliana** (Oliv.) Furtado et Montien — **Fig. 10.**

*L. celebica* Bl., Mus. Bot. Lugd. — Bat. II (1856) 127?

*L. hexaptera* Miq., Fl. Ind. Bot. I (1855) 623 and (1856) 1090; Clarke in Hook. f. Fl. Brit. Ind. II (1879) 577 pro parte typica?

*L. ovalifolia* T. & B. sensu Auctt.

*L. riedeliana* Oliv. in Journ. Linn. Soc. XV (1876) 99 **basinym.**

This variety falls among the smaller flowered and smaller fruited forms of *L. ovalifolia* with 6 ridges to the flower-buds, slightly sinuate in the tube, not gibbose at the sinus, almost evanescent above. Fruiting calyx obconically elongate at base, sepals not winged; capsule shortly beaked.

CELEBES: **North:** Gorontalo (Riedel: K — **holotypus**).

The holotype of *L. hexaptera* Miq. (= *L. celebica* Bl.) was from Likupang also in North Celebes, collected by Forester, which we have not seen; but the description of the subgenus *hexaptera* Miq. based on it states that "the calyx is hexagonal in tube, not plicate but shortly winged in the ridges", which excludes *L. ovalifolia* var. *ovalifolia*. Further Koehne in Engl. Jahrb. IV (1883) 24 in a footnote to *L. hexaptera* Miq. states that a duplicate specimen labelled by Miquel in Herbarium of Goettingen was not *L. ovalifolia* but belonged to *L. calycina* which is a lapsus calami for *L. paniculata*; this statement also suggests the correctness of our identification.



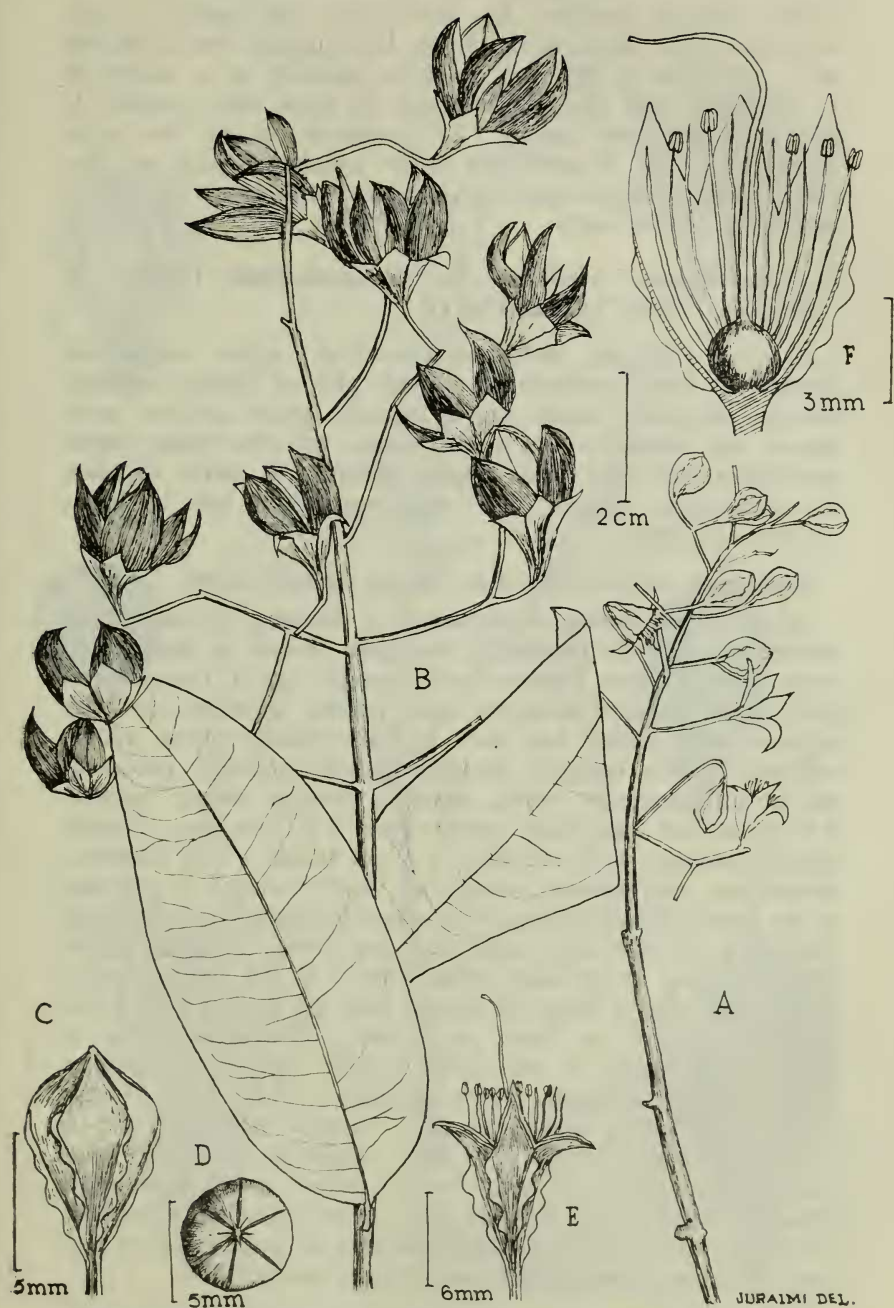


Fig. 10. *L. ovalifolia* T. & B. var. *riedeliana* (Riedel s.n.: K — holotype).

A, Inflorescence. B, Twig with mature capsules. C-D, Flower bud.  
E, Flower after anthesis. F, Longitudinal section of flower.

Koorders 17,716<sup>B</sup> from Minahassa in Celebes probably belongs here, but it is too young for an accurate determination.

The holotype specimen has both fruits and flowers, a rare occurrence. The ridges in the flower buds suggest that it belongs to *L. piriformis* group. But we have retained as a variety of *L. ovalifolia* until the species could be more fully studied. It may be placed very close to *L. borneensis* but for the larger flower buds, the broader and more undulate ridges and for fruiting calyx less abruptly narrowed into the base. The group requires a further study.

**7g. *Lagerstroemia ovalifolia* var. *novoguineensis* Furtado et Montien — Fig. 7A and Fig. 11.**

A var. *ovalifolia* alabastris minoribus, supra subglobosis abrupte in basin pedicellatis, 6-alatis, alis ad sinum interdum abrupte latioribus, supra sinum elevatis, prope apicem secus suturas late sulcatis magis alatis; fructus calycibus basin versus pedicelliformiter (4–5 mm longis) cuneatis, in parte cupulare 6–7 mm longis; capsulis 12–14 mm longis, 9–10 mm in diam., breviter apiculatis.

**Holotypus:** NOVA-GUINEA: Wirsar (Schram 6,068; LAE).

*Leaves* elliptic-oblong or obovate, 3–7 cm long, 2–4 cm broad, acuminate, acute or rounded at the apex, (leaves at the base of twigs often smallest, obovate with rounded apex), pustulate on both sides, shortly decurrent into petiole, greenish on both surfaces when young, but when in fruit greenish brown above, yellowish brown beneath, deciduously and minutely pubescent on nerves, glandular above, minutely densely dotted beneath, 5–8 nerved on each side; petiole short 1–2 mm long. *Panicle* short cylindrical, 5–10 cm long, 3–5 cm broad, a few flowered, deciduously and minutely velutinous, slightly winged in the axis of the young growth. *Flower bud* somewhat clavate 10 mm long (including 3–4 mm long base), 4–5 mm broad, 6-ridged, ridges slightly sinuate in the tube, often gibbose at the sinus, broadly sulcate and winged along the sutures near the apex. *Calyx* 10–12 mm long 6 mm in diam., deciduously puberulous; lobes 6, erect or spreading, 3 mm long; winged along the margins. *stamens* many, subequal. *Ovary* subglobose with about 17 mm long style. *Fruiting calyx* obconical strongly narrowed into a long base, about 10–11 mm long, (including 4–5 mm long pedicelliform base), 10 mm broad; ridges acute, prominent, straight, running up to the very base; lobes spreading, sometimes reflexed, about 3 mm long. *Capsule* oblong or globose, 12–14 mm long, 9–10 mm broad, light brown, shortly mammillate.

NOVA-GUINEA: **West New Guinea**, Wirsar (Schram 6,068: LAE — **holotype**, SING — **isoholotype**); Sorong by the Warsamson River (Iwangin 5,661: LAE, PNH & SING).

This falls into a group of varieties of *L. ovalifolia* which are characterised by having smaller flower buds and smaller capsules, but this variety is peculiar. The flower buds are 6-winged, the

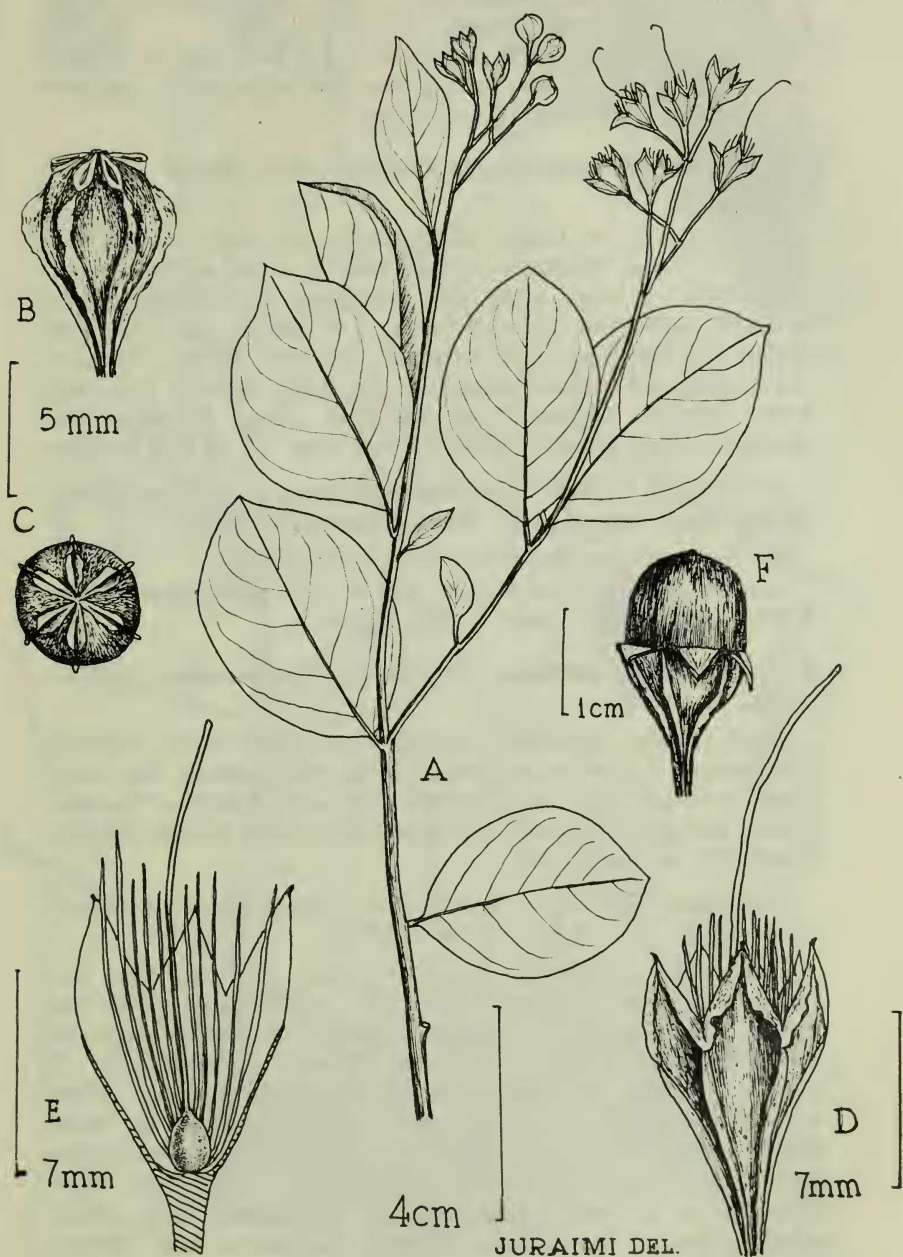


Fig. 11. *L. ovalifolia* var. *novoguineensis* (A-E: Schram 6,068: LAE — holotype; Iwangin 5,661: SING).

A, Fertile twig. B-C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Capsule.

wings sometimes much broader at the sinus, but smaller above it and raised and sulcate near the apex. The fruiting calyx too is narrowed into a pedicelliform base, and capsules shorter (12–14 mm long) very shortly apiculate.

Probably Schram 12,361 and Mall 11,664 from the Warsamson valley in New Guinea also belong here, but being sterile specimens we have left them from the citations.

8. *Lagerstroemia subsessilifolia* Koehne in Engl. Pflanzr. 17 = IV. 216 (1903) 267.

Tree about 16 m. *Leaves* not punctate, glabrous, 7–10 cm long, 3.3–5 cm broad, oblong or oblong-elliptic, acute at base, somewhat obtuse at apex, sometimes acuminate, chartaceous, greyish on both sides, not paler beneath, 5–9 nerved on each side; petiole 1.5 mm long, with narrowly decurrent lamina. *Peduncle* and pedicel ochraceous tomentose, the latter about 6 mm long; lobes reflexed, adpressed on the tube, about 3.5 mm long, glabrous within. *Capsule* about 19 mm long, 12–14 mm in diam.

AUSTRALIA: **Cape York Peninsula**, upper part of the Mitchell Seeding Bag, mountainous region. (Hann 47: BRI?).

We have not seen any specimens of this species.

Another species *L. archeriana* and its var. *glabrescens* (Section *Trichosepalum*) also occur in this region.

9. *Lagerstroemia pustulata* Furtado et Montien spec. nov. — Fig. 12.

Inter species Sectionis *Pterocalymma* cum foliis, calycibus fructibusque majoribus et costis calycis rectis acutis hoc taxon ponendum, sed foliis calycibusque pustulatis, fructibus maximis, sepalis margine incrassatis, basi propter margines retroflexiusculas constrictis sat distinctum.

**Holotypus:** BORNEO: Sabah, Prov. Lahad Datu ad Segama Sarai (Muin Chai: SAN. 26,006: SING).

*Folia* elliptica oblonga, 12–17 cm longa, 6–7 cm lata, basi interdum oblique acuta vel obtusiuscula, utrinsecus 10–12 nervata, viridia glabra, utrinque pustulata, pustulis in pagina superiore conspicuioribus; petiolus 5–10 mm longus. *Inflorescentia* axi cinereo-puberula, paniculata, remote breviterque ramosa, diffuse cymosa, pedunculis circa 2.5 cm longis, pedicellis ad 1.5 cm usque longis. *Alabastrum* non visum. *Calyx* post anthesin tantum visus, cinereo puberulus, pustulatus, campanulatus, in tubo 6 mm altus, infra subito obconico-pedicellatus, 6 costulatus, costis acutis; sepalis circa 5 mm longis, margine incrassatis, basi propter margines retroflexas constrictis. *Stamina* numerosa, versus basin calycis sita, exserta. *Ovarium* glabrum, ovatum, apice conoideum; stylus longus, exsertus. *Calyx* fructiferus lignosus, late cupularis, 5 mm altus, infra 8–12 mm longo pedicello abrupte praeditus; sepalis triangularibus, patulis vel porrectis. *Capsula* oblonga vel subglobosa, circa 25 mm longa, 20–22 mm in diam., apice subito mammillata.



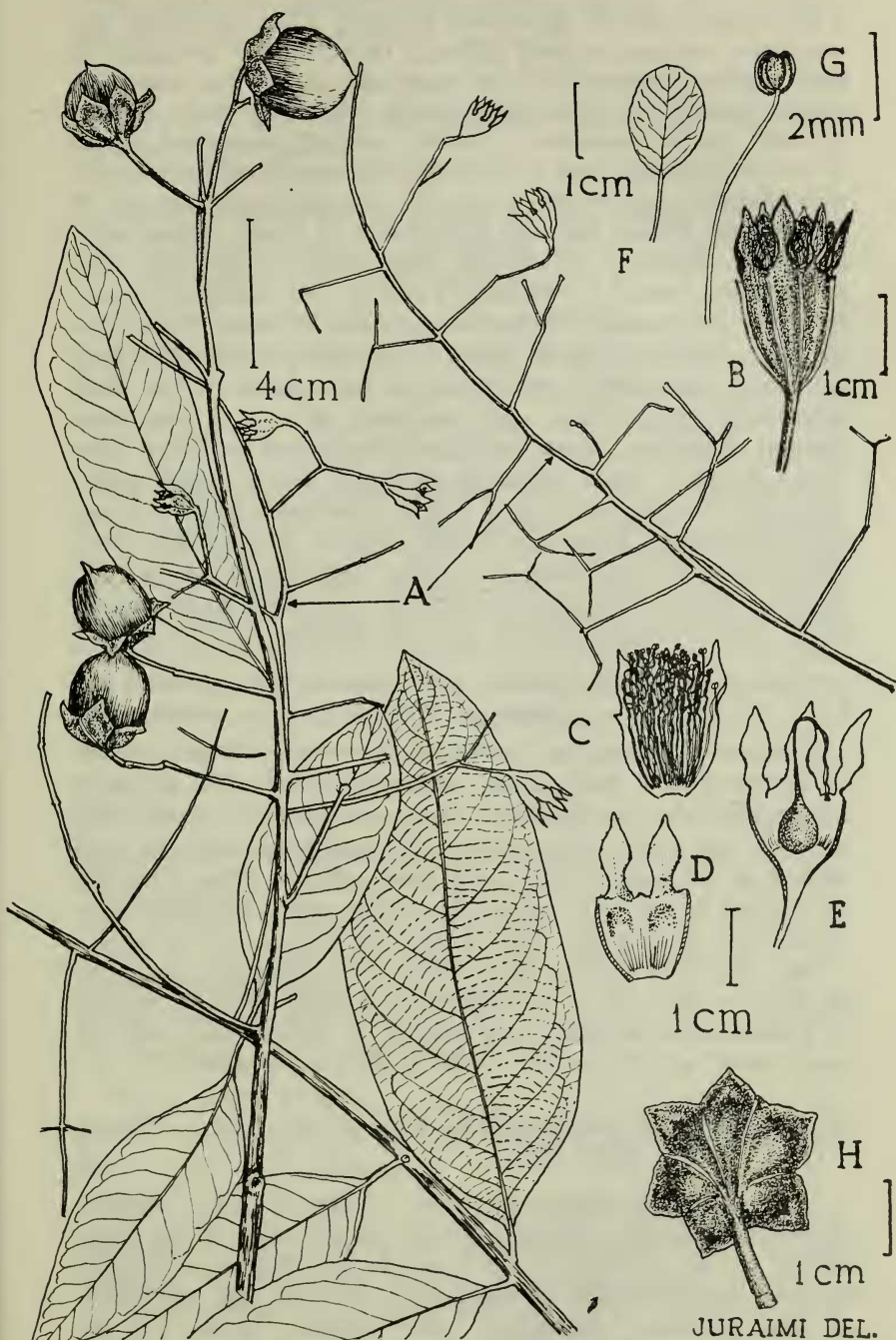


Fig. 12. *L. pustulata* (A-H: Muin Chai 26,006 in SING — isoholotype).

A, Twigs with flowers and capsules. B, Flower after anthesis. C, Part of calyx with stamens. D, Part of calyx. E, Longitudinal section of flower. F, Petal. G, Stamen. H, Fruiting calyx showing external structure.

Tree 10–18 m high. *Leaves* elliptic-oblong, 12–17 cm long, 7 cm broad, acute or acuminate at apex, acute or obtuse and sometimes oblique at base, glabrous but distinctly pustulate on both surfaces; nerves 10–12 on each side, rarely less, ascending slightly curved at about 60°; petiole 5–10 mm long. *Panicle* minutely greyish pubescent, terminal, narrowly pyramidal, up to 32 cm long, bearing once or twice dichotomously branched cymes, with distant long peduncles ( $\pm$  2.5 cm long); pedicels up to 1.5 cm long. *Flower bud* (not seen). *Calyx* in flower campanulate, pustulate, cinereous, puberulous, tube about 6 mm long with an obconical base 7–8 mm long; 6 ribbed, ribs prominent, acute, decurrent into pedicelliform base; space between the ridges curvedly swollen; lobes 6, about 5 mm long, erect, thickened in margin and slightly retroflexed at base. *Petals*  $\pm$  6; limb suborbicular or obovate,  $\pm$  10 mm long; claw  $\pm$  5 mm long. Stamens numerous, exert, seated at the bottom of calyx-tube. *Ovary* glabrous, ovate, gradually narrowed into a conical apex; style long. *Fruiting calyx* hard, abruptly narrowed into 8–12 mm long pedicelliform base; tube broadly cupular, about 5 mm deep; lobes triangular, spreading or porrect, thickened in the margin. *Capsule* oblong or subglobose up to 25 mm long, 20–22 mm in diam., abruptly mammillate at apex; mammillus 1–2 mm long.

NORTH BORNEO: **Sabah**, Prov. Lahad Datu (Muin Chai SAN. 26,006: SING — **holotype**, SAN & SAR — **isoholotypes**).

This species belongs to *Pterocalymma* section and falls among the species having large leaves, calyces and fruits, but is easily distinguished by its pustulate leaves and calyces, very large capsules, and calyx lobes which look constricted near the base because of the margins there being more reflexed. Were it not for the number of the calyx ridges, the species could be placed near *L. speciosa* since it has large leaves and fruit.

The only two species which from the description seem to be akin to this are *L. subsessilifolia* Koehne from Australia, *L. quinquevalvis* Koehne from Tonkin in Indo-China, both of which were not represented in the collections examined by us.

10. **Lagerstroemia quinquevalvis** Koehne in Engl., Pflanzr. 17 = IV. 216 (1903) 268.

Tree 4–5 m tall, with spiny trunk; fruiting branches darkish, pulverulent pruinose, glabrous. *Leaves*: petiole about 4 mm long; lamina 10–14 cm long, 3.5–5.4 cm broad, shortly acuminate at base, oblong-obovate to lanceolate, more or less acuminate at apex, glabrous, chartaceous, paler beneath; nerves 8–9 on each side apparently, slightly prominent beneath; reticulations not prominent. *Fruiting calyx*, like pedicels and axis of the panicles, ochraceous pulverulent tomentulose; tube saucer-shaped, 5–6 mm long, 15 mm in diam., strongly 6-costate; lobes 3–4 mm long, spreading, glabrous within. *Capsule* 19–23 mm long, 17–20 mm in diam., 5-valved, sometime 4, glabrous.

INDOCHINA: **Tonkin:** Muong de Rip village near Tu Phap (Balansa 3,866 — **holotype** in P, not seen).

We have not seen any specimens of this species. Gagnepain (Fl. Indochina II, 1923 p. 962) has included this among insufficiently known but good species.

11. ***Lagerstroemia undulata*** Koehne in Engl. Jahrb. XLII, Beibl. 97, (1908) 52; Gagn., Fl. Indochine II (1921) 946; Craib, Fl. Siam. Enum. I (1931) 727. — **Fig. 13.**

A tree 10 m tall. *Leaves* ovate-elliptic or ovate-oblong, 6–15 cm long, 4–7 cm broad (smaller in inflorescence axis), acute at the apex, shortly cuneate or sometimes roundedly narrowed to the base, hairy on both sides when young, later minutely puberulous along midrib above, and velutinous puberulous along the midrib and nerves beneath, paler beneath; 7–9 nerves on each side of midrib; petiole 2–4 mm long. *Panicle* terminal or axillary, 15–25 cm long, 9–15 cm broad; axis and branchlets minutely velutinous, angular and slightly winged, often bearing smaller leaves or leaf-like bracts, primary lateral branches 7–8 cm long, opposite or sub-opposite; bracteoles at the base of pedicels linear, 1–3 mm long with puberulus. *Flower bud* turbinate with undulate or crispate wings, orbicularly and undulately auriculate at the sinuses, abruptly narrowed into wings or bands on both sides of the sutures of the bud above, ending with a small nipple at apex; pedicel 2–3 mm long, the mid-flowers in the dichotomy sessile. *Calyx* 6–8 mm long, 5 mm broad, puberulous, 6-ridged, ridges orispace or undulate, tube gradually cuneate to the base; lobes thickened or winged in the margin. *Petal* oblong 8 mm long (including 2–3 mm long claw), 4 mm broad, undulate in the margin. *Stamens* many, with 3–6 thicker and longer filaments, the rest subequal, filaments 2–2½ times longer than the calyx-tube. *Ovary* oblong with a long slender style, glabrous, capitate.

THAILAND: Northern: (Nakawn Sawan?), Me-ping River Rapids, on the border of the hilly jungle, at 200 m (Hosseus 530: BM and E — **isoholotypes**).

This is closely allied to *L. crispa* which has smaller leaves, the ridges on the flower-bud, calyces much more crispate passing crispately and undulately into the suture above without forming a hollow, cupuliform auricle at the sinus. In *L. paniculata* which belongs also to a group having undulate ridges to the calyx, has larger leaves than in *L. crispa* that are black dotted beneath; its calyx ridges being less crispate, slightly enlarged at the sinuses to merge into the suture with the least possible undulations.

We have made var. *subangulata* the basynym of a new species.

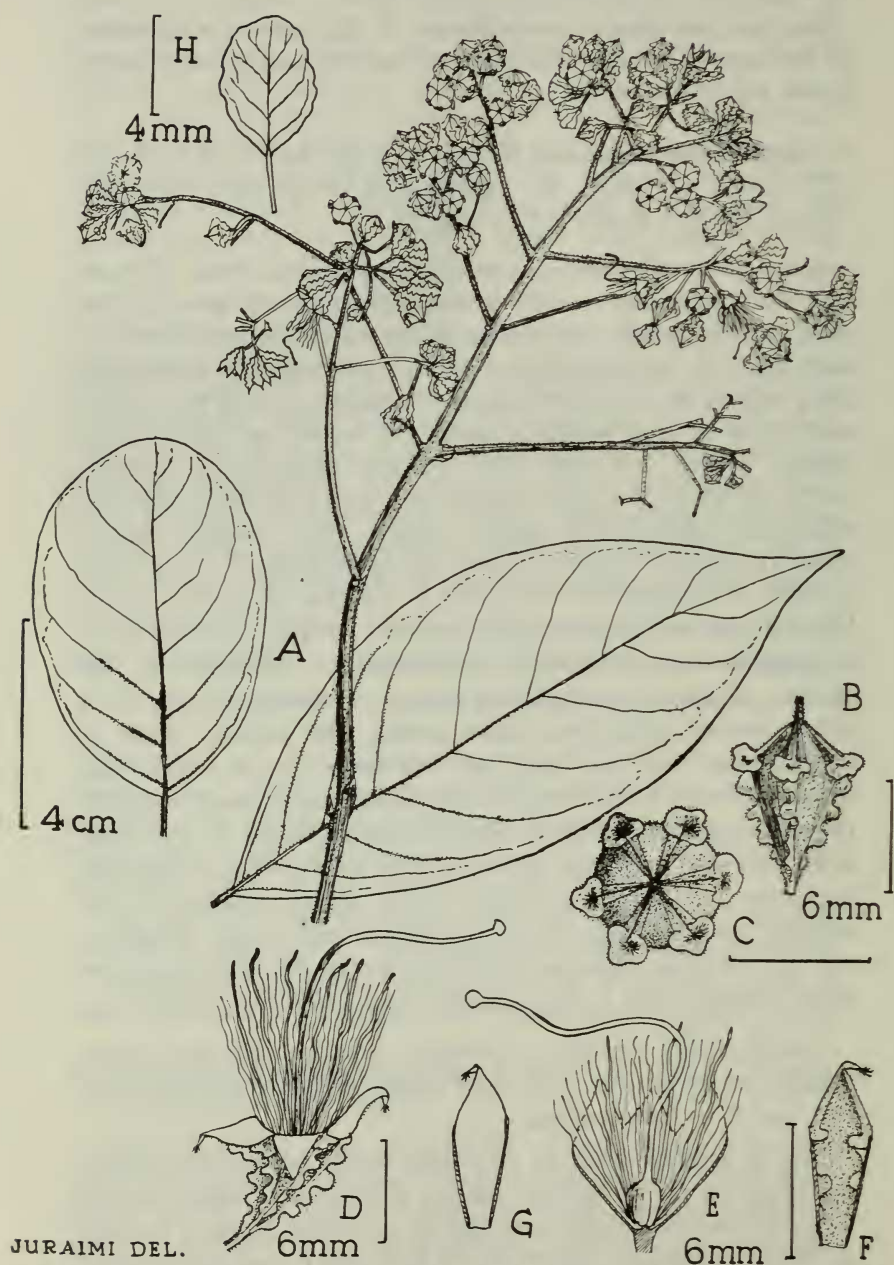
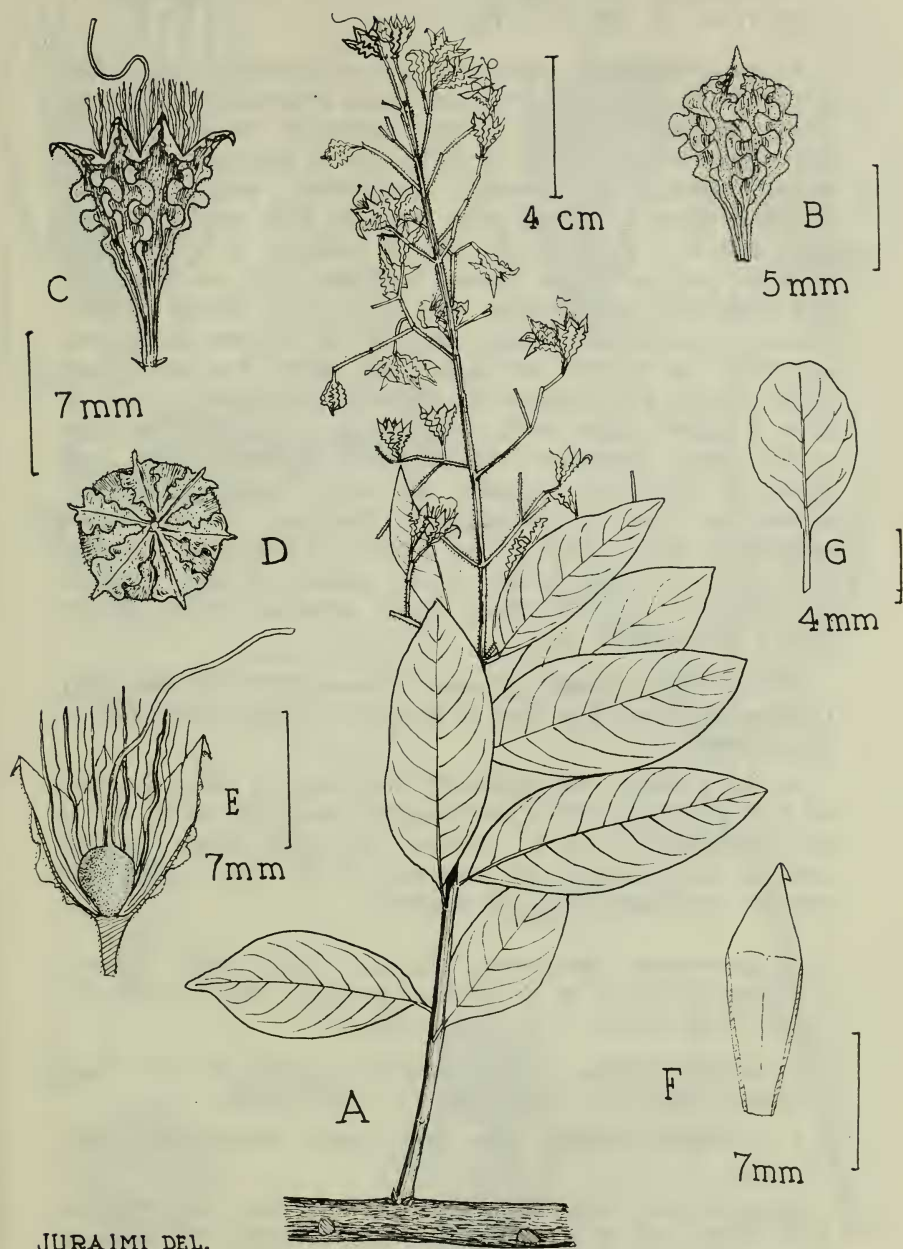


Fig. 13. *L. undulata* Koehne (A-H: Hosseus 530 in E — isoholotype).

A, Inflorescence and leaf B-C, Flower bud. D, Flower after anthesis.  
 E, Longitudinal section of flower. F, Part of calyx showing exterior.  
 G, Part of calyx showing interior. H, Petal.





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Fig. 14. *L. crispa* Pierre (A-G: Clemens 3,477 in A).

A, Inflorescence. B & D, Flower bud. C, Flower after anthesis. E, Longitudinal section of flower. F, Part of calyx showing interior. G, Petal.

12. **Lagerstroemia crispa** Pierre ex Laness, Plant. Util. (1886) 321: & Koehne, in Engl. Jahrb. LXLI (1908) 102 (seminuda) ex Gapnep in Not. Syst. III (1914) 357 et in Fl. Indochine II (1921) 945 fig. 101-4. — **Fig. 14.**

A tree, branchlets puberulous. *Leaves* lanceolate or ovate-elliptic, 6–10 cm long, 2.5–4.5 cm broad, acuminate at the apex, shortly angustate at base, slightly undulate in margin, more or less puberulous on nerves on both surfaces especially along the midrib, shining and minutely gland-dotted above, dark or brownish green in colour, paler beneath; 8–11 nerves on each side; petiole 2–4 mm long. *Panicle* terminal, 8–25 cm long, minutely grey pubescent, lateral branches 4–12 cm long, axis and branchlets quadrangular with each angle shortly winged. *Flowers* bi-bracteolate, lateral ones in the ultimate trichotomy pedicelled, the middle one larger and sessile, bracteoles small linear. *Flower bud* turbinate or pyriform, prominently nipped at apex, 6 ridged; ridges much crispate in the calyx tube, auriculate at the sinus, undulately and crispately narrowed along both sides of the suture towards the apex. *Calyx* deciduously puberulous; lobes 6, triangular, 3 mm long, patent, slightly puberulous within. *Petals* oblong, 5 mm long (including 1–1.5 mm long claw), 3–4 mm broad, shortly cuneate at base. *Stamens* 3–6 thicker and longer, others many, subequal. *Ovary* obovate with a long slender style.

INDOCHINA: **Annam**, Tourane (Clemens 3,477: A, BM, UC). **Cochinchina** Prov. Bun Hao at Baochiang (Pierre 4,995: BM — isoholotype).

In the protolog the leaves are described as being glabrous on both surfaces but they are minutely puberulous on the nerves on both surfaces. In *L. undulata* the calyx ridges are less undulate and crispate, the auricles at the sinus hollow and abruptly narrowed along the sutures.

13. **Lagerstroemia paniculata** (Turcz.) Vidal, Phan. Cuming Philipp. (1885) 39 et 115; Koehne in Engl., Pflanzr. 17 = IV. 216 (1903) 268 fig. 55 W & X — **Fig. 15.**

*L. calycina* Koehne in Engl. Jahrb. IV (1883) 25 et in Engl. u. Prantl., Pflanzf. III, 7 (1891) fig. 5 C & X: **isonym**.

*L. piriformis* Koehne Merr., Sec Enum. Philipp. III (1923) 137 p.p.

*Pterocalymma paniculata* Turcz. in Bull. Soc. Nat. Moscow XIX (1846) 508; Walp., Ann. Bot. Syst. I (1848) 295. **basinym**.

A tree 15–18 m tall. *Leaves* oblong-elliptic or ovate-oblong, 6–17 cm long, 3–7 cm broad, obtusely acuminate at the apex, subrounded often oblique and shortly cuneate at the base, glabrous and dark green above, deciduously puberulous along the midrib and dotted and paler beneath, 8–11 nerved on each side; petiole 5–10 mm long. *Panicle* terminal 10–30 cm long, 5–20 cm broad; young growth minutely velutinous, quadrangular

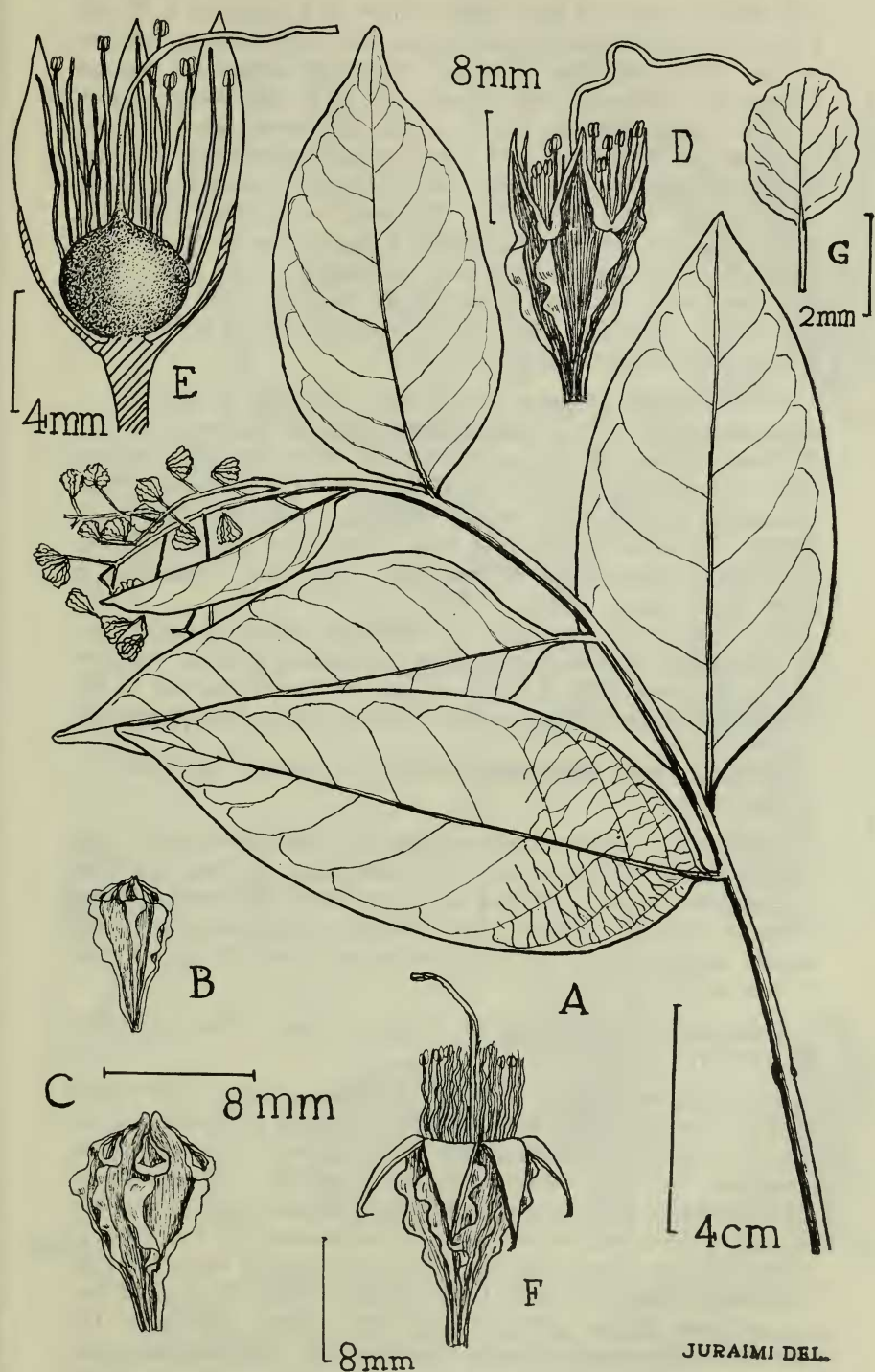


Fig. 15. *L. paniculata* (Turcz.) (A-C: Cuming 1,188 in E — isoholotype; D-E Azurin 29,375 in SING).

A, Twig with leaves and inflorescence. B-C, Flower bud. D & F, Flower after anthesis. E, Longitudinal section of flower.

and slightly winged at each angle. *Flower bud* turbinate 8–12 mm long with wings undulate and crispate, 4–6 mm in diam., enlarged at the sinus and then gradually narrowed along the sutures toward the bud-apex; but nipple up to 1 mm long; pedicel 4–5 mm long; the mid flower in the dichotomy sessile. *Calyx* in flower 10–30 mm long, 4–5 mm broad, puberulous, 6-ridged somewhat abruptly narrowed into a long 3–5 mm long base; lobes 3 mm long, triangular, thickened or slightly winged in the margins at the apex, gradually broader winged towards the base. *Petal* oblong about 5 mm, excluding 2 mm long claw, 3–4 mm broad, undulate in the margin. *Stamens* many, 6 thicker and longer filamented, the others subequal. *Ovary* oblong with a long slender style. *Capsule* not seen.

**PHILIPPINES:** Luzon, loc. incert. (Cuming 1,188: A — **clasto-holotype**; E — **isoholotype**); Isabela Province at San Mariano (Ramos & Edano 46,861: B, SING & UC); Isabela Prov. (Azurin 29,375: A, SING & UC); Laguna Prov. (Amarillas 25,122: GH); Mount Makiling (Abadilla 35,394: A, PNH); Casiguran in Tayabas Prov. (Ramos & Edano 45,371: UC); South Camarines (Ahern in 1902, s.n.: UC); Montalban in Rizal Prov. (Loher 13,251: UC).

The holotype is apparently in Herbarium Petropolitanum (now of Leningrad), whence Koehne had received as a gift a fragment of the specimen. This fragment is now in the Herbarium of the Arnold Arboretum. Hence we have indicated this as clastoholotype.

14. *Lagerstroemia pterosepala* Furtado et Montien **spec. nov.** —  
**Fig. 16.**

A speciebus omnibus cum calycum alis crispato-undulatis haec species facile distinguenda: alis chartaceis, e basi alabastris angustissimis superne dilatatis, ad sinum constrictis, secus suturam utrinque convexo ampliatis, post anthesin longitudinaliter plicatis sepala externe tectis; petalis rhomboideis, circa 10 mm longis, 9 mm latis.

**Holotypus:** PHILIPPINES: Luzon, Abra Prov. (Adduru 21,959: A).

Arbuscula ut videtur; ramulis primum alutaceis dein badiis, glabris, quadrangulatis, secus angulos alatulatis. *Folia* elliptica vel obovato-elliptica, utrinque glabra vel subtus secus costam obscure parceque pilosula, utrinsecus 5–7 nervata, supra lucida, fusciscentia, secus costam depressam glandulis paucis praedita, subtus viridescens, minute brunneo-glandulosissima, basi acuta in petiolo 1–3 mm longo breviter decurrentia, apicem versus breviter acuminata, summo obtusa. *Inflorescentia* apicalis, 3–6 cm longa, in ramulos paucos perbreves angulatos, alatos, puberulos 1–2 divisa. *Alabastra* claviformia, 6-alata, alis chartaceis alutaceis crispato-undulatis, superne valde ampliatis, ad sinum constrictis, secus suturam utrinsecus convexo dilatatis, post anthesin longitudinaliter retroflexis, sepala externe tectis. *Flores:* pedunculi, pedicelli calycesque canescente puberuli; tubus calycis circa



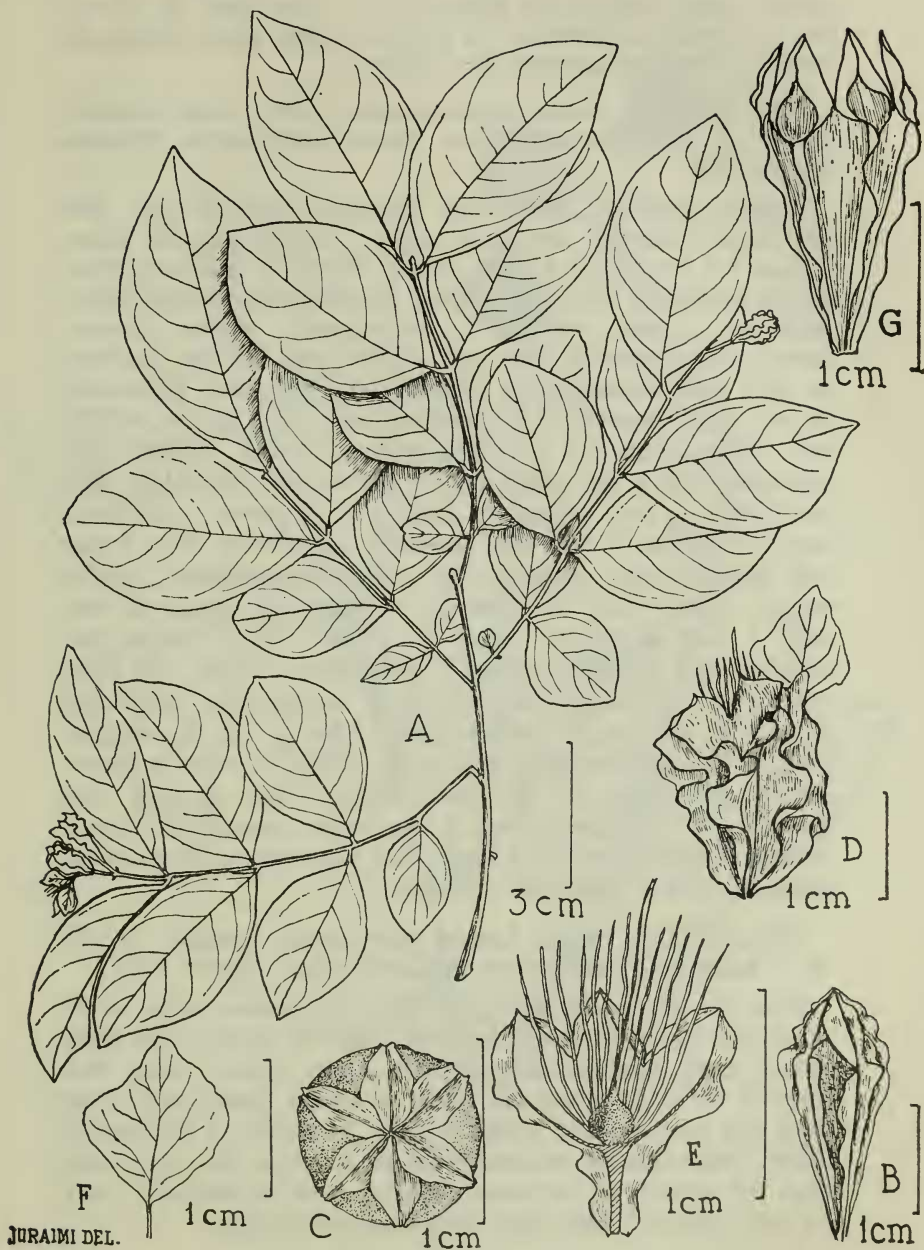


Fig. 16. *L. pterosepala* Furtado et Montien (Adura 21,959 in A — holotype).

A, Fertile twig. B-C, Flower bud. D, Flower. E, Longitudinal section flower. F, Petal. G, Calyx in flower to show external structure.

10 mm longus, obconicus; sepala 4–5 mm longa; petala rhomboidea vel obovato-rhomboidea, basi breviter decurrentia, margine repanda apice obsusa, cum unguiculo 1–1.5 mm longo 10–11 mm longa, 9 mm lata. *Stamina* 3–6 longiora, altera plura subequalia, breviora. *Ovarium* subglobosum, glabrum.

**PHILIPPINES:** **Luzon** Septentrionalis, prov. Abra (Adduru 21,959: A — **holotypus**); prov. Ilocos meridionalis (Clemens 15,815: UC).

Treelet apparently, branchlets yellowish grey at first, then dull brown, glabrous, tetragonal, slightly winged along the edges. *Leaves* 5–8 cm long, 2.5–5 cm broad, elliptic or obovate-elliptic, shortly acuminate with obtuse apex, convexly cuneate and shortly decurrent at base, opposite or sub-opposite, shining chestnut brown above, greenish with dark brown dots beneath, glabrous on both sides or sometimes slightly and deciduously puberulous on the midrib beneath, 5–7 nerved on each side; petiole 1–3 mm long. *Inflorescence* 3–6 cm long, terminal panicle, minutely grey pubescent with a few short angled and winged branchlets, each subdivided or not, ultimately bearing 1–3 flowers; mid-flower larger, sessile on 5 mm long peduncle; side flower on 2–5 mm long pedicel, both peduncle and pedicel quadrangular, shortly winged. *Flower bud* club shaped or nearly so, about 10 mm long, 6 mm in diam.; ridges 6, winged, wings chartaceous, undulate and crispate, enlarged both sides toward the sinus, convexly dilated along both sides of the suture; *calyx* tube funnel shaped, 10 mm long, 6–7 mm in diam.; lobes 6, with the marginal wings folded longitudinally backwards, patent or erect in flower, slightly puberulous at the apex within. *Petal* 10 mm long (including 1–2 mm long claw), 9 mm broad, rhomboidal, shortly cuneate at base. *Stamen* 3–6 longer and thicker ones, others many, subequal. *Ovary* subglobose, glabrous.

**PHILIPPINES:** **North Luzon:** prov. Abra (Adduru 21,959: A — **holotype**); prov. South Ilocos (Clemens 15,815: UC).

From all the species having crispate and sinuate wings to the calyx, this taxon is very remarkably distinct in its wings being conspicuously chartaceous and often much dilated along both sides of the ridge below the sinus, somewhat constricted at the sinus and then enlarged convexly along both sides of the sutures, folded longitudinally backwards so as to cover the calyx lobes after the anthesis of the flower; the petals are rhomboidal about 10 mm long and 9 mm wide, shortly cuneate at base.

### 15. *Lagerstroemia crassifolia* Furtado et Montien — Fig. 17.

A *L. borneense* cui valde affinis, haec species calycibus fructiferis costis minus prominentibus, sepalis reflexis, basi brevioris pedicellatis, foliis coriaceis sat distincta.

**Holotypus:** BORNEO: Sabah, regio Sandakan ad Gumantong, prope flumen Lambah (Ahwing 47,262: SING).

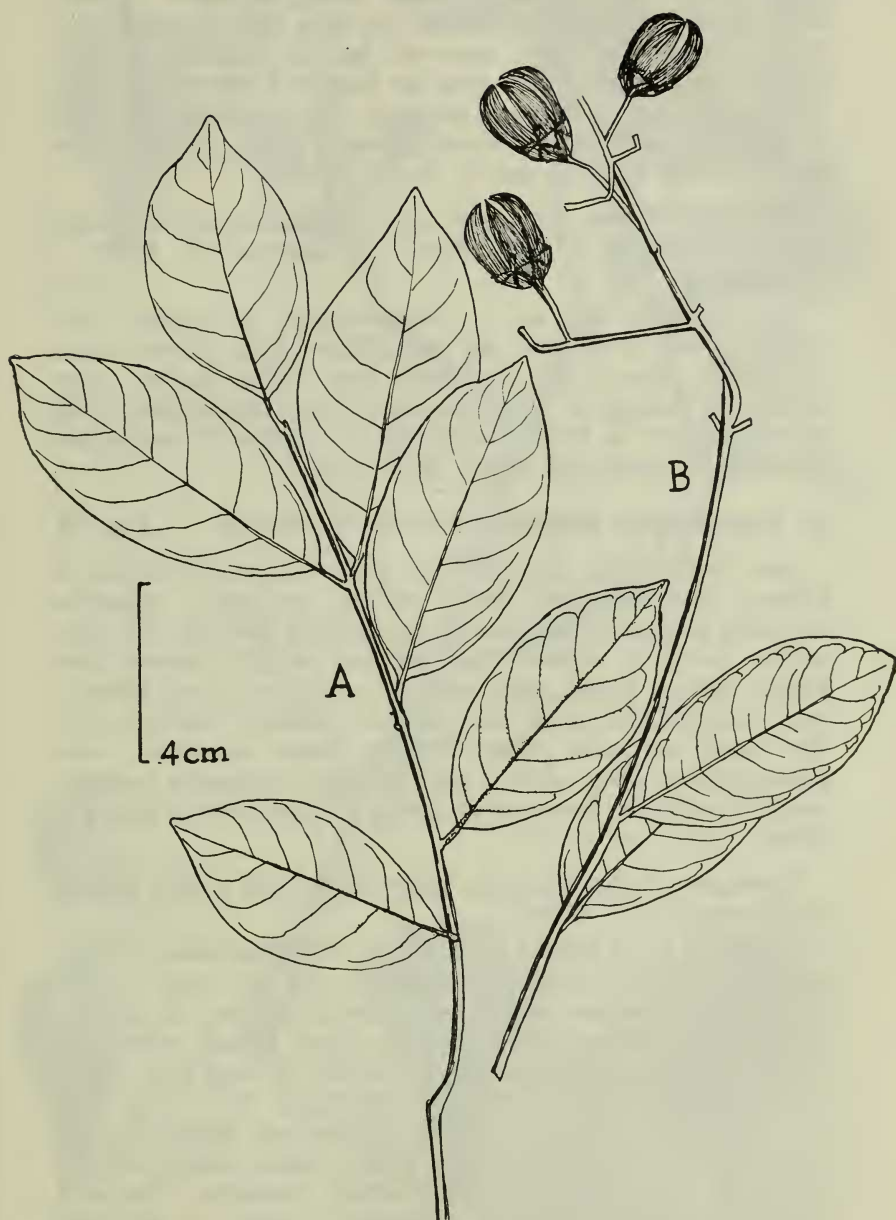


Fig. 17. *L. crassifolia* (Ahwing 47,262 in SING — holotype).  
A, Twig. B, Twig with capsules.

A tree 50 ft. tall. *Leaves* oblong-elliptic, coriaceous, 5–8 cm long, 3–4 cm broad, shortly acuminate or acute or obtuse at the apex, often oblique at base, greenish grey and shining above, dark brown with minutely pubescent along the nerves beneath, 6–10 nerved on each side; petiole 4–6 mm long. *Fruiting calyx* shortly cupular, abruptly narrowed into a pedicelliform base, slightly and straight ridged upto the base, 4–5 mm deep in cup, 10 mm in diam. with stalk-like base 3–4 mm long; lobes six, 4 mm long, completely reflexed. *Capsule* oblong or subglobose about 15 mm long, 12 mm in diam.; 6-valved.

BORNEO: **Sabah**, Sandakan distr. at Gumantong, by Sungei Lambah (Ahwing 47,262: SING — **holotype** & SAN — **isoholotype**).

This species is very like *L. borneensis* but the fruiting calyx ridges are less prominent, the pedicelliform base shorter, sepals completely reflexed and the leaves very coriaceous and often oblique. It belongs to *L. borneensis-piriformis-koehneana* group which requires a further collecting to enable a comparison between the forms and clarify their status.

16. **Lagerstroemia borneensis** Furtado et Montien — **Fig. 18.**

Inter species (e.g. *L. piriformis*) cum calycibus fructiferis in longam pedicelliformen basin abrupte angustatis, alabastris 6-costatis piriformis basi breviter pedicellatis ponenda, sed haec species costis ad sinum usque deciduo recteque alulatis, post horum lapsum etiam prominentibus, ad sinum haud gibbosis, supra desinentibus, secus suturas mox sulcatis; fructus calyce fere medio in basin pedicelliformiter subito angustato, costis prominentibus rectis acutis e sino ad basin conspicuis praedito; sepalis haud alatis, fere arrectis; fructu oblongo breviter apiculato differt.

**Holotypus:** Borneo orientalis; regio Kutai, juxta flumen Belajan (Kostermans 10,249: SING).

A tree 15–32 m high. *Leaves* oblong or elliptic-oblong, (ovate and smaller in the lower part of twigs), 4–9 mm long, 3–4 cm broad, acute or obtuse at the apex, sometimes shortly acuminate, glabrous and shining above, minutely gland dotted, puberulous on nerves and brownish beneath, 6–9 nerved on each side; petiole 2–5 mm long. *Panicle* terminal, cylindrical, 10–30 cm long, 5–10 cm broad, dark grey or brown puberulous, slightly angular in the axis and branchlets when young; bracts small, leaf-like, deciduous. *Flower-bud* minutely brown pubescent, obscurely apiculate, turbinate gradually elongated at base, 11 mm long (including 3 mm long pedicelliform base), 6 ridged; ridges prominent, shortly and deciduously winged, straight, desinent above the sinus. *Calyx* in flower campanulate, 10–12 mm long (including 4–5 mm long pedicelliform base), 6 mm in diam., prominently straight-ridged; lobe 3 mm long, triangular, spreading or reflexed, slightly thickened along the margin; lateral flowers borne on a pedicel about 5 mm long; mid-flowers sessile. *Petal*



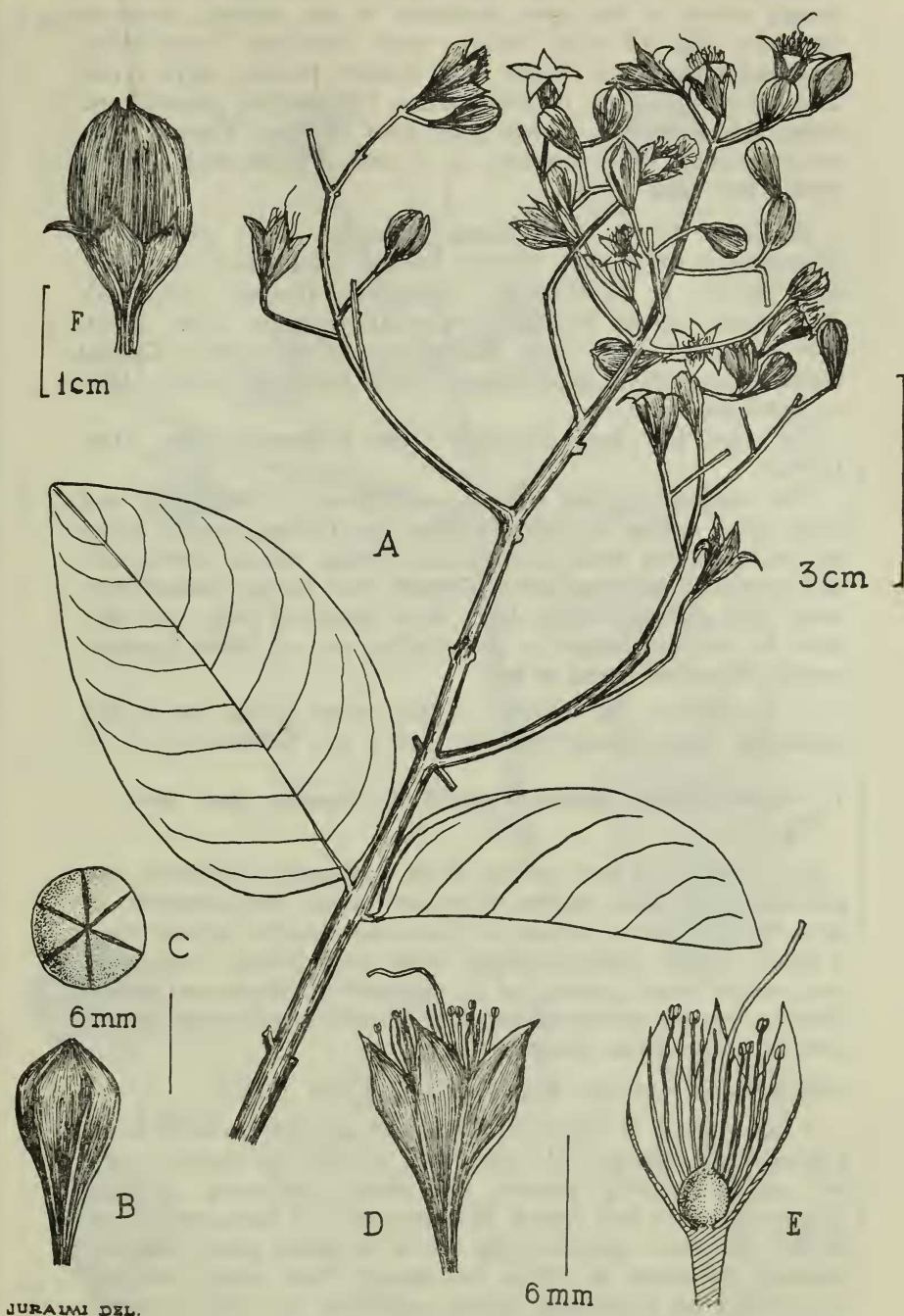


Fig. 18. *L. borneensis* (A-E; Kostermans 10,249 in SING — holotype; F: Kostermans 5,046 in SING — holotype of fruit.)

A, Fertile twig. B-C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Capsule.

rhomboidal, 12 mm long (including 2–3 mm claw), 6–7 mm broad, acute at the apex, undulate in the margin, narrowly decurrent into the claw. *Stamen* many, subequal. *Ovary* ovate, glabrous; style about 15 mm long, slender. *Fruiting calyx* 7 mm deep, 12 mm in diam., narrowed into a 3.5 mm long pedicelliform base; ridges straight, conspicuous even at base. *Capsule* light brown, oblong, 15–17 mm long, 10–12 mm in diam., with a nipple upto 1 mm long.

**BORNEO (East):** **West Kutei**, Kelindjau River near Melan (Kostermans 9,627: BM, SING); Medom (Neth. Ind. For. Serv. b.b. 29,270: A, SING); M. Antjaloeng (Endert 2,073: A). **East Kutei**, Sungai Menubar region (Kostermans 5,046: PNH, SING); Berau, Kelei River (Kostermans 21,051: SING). **Central Kutei**, Belajan River (Kostermans 10,214: SING, & 10,249: SING — **holotype**).

The fruit has been described from Kostermans No. 5,046 (SING).

This species together with *L. crassifolia*, *L. piriformis* and other allied species or varieties from New Guinea, form a group of species having small slightly and straight ridged flower buds and a fruiting calyx narrowed abruptly into a long pedicelliform base. The different forms have been separated here, but they must be studied further to see whether any of these represent merely ecological forms or not.

*L. koehneana* also belongs to the same group but it has somewhat larger flower-buds; its fruit is not known.

**17. *Lagerstroemia cristata* Furtado & Montien spec. nov. — Fig. 19.**

A *L. piriforme* haec species facile distinguitur alabastro sine pedicelliforme base ambitu rhombeo, costis prominentibus in tubo, prope apicem elevatis et latiusculo sulcatis, sepalis apice it inter suturas calloso-cristatis, callis inter suturas orientibus, cum suturis haud junctis. Ad *L. callosam* proximior sed differt alabastro majore conspicue apiculato ejusdem costis prope apicem elevatis et conspicue sulcatis.

**Holotypus:** PAPUA: Koitaki (Carr 12,270: SING).

A tree about 6 m tall by a stream bank in open savannah land. Leaves ovate-oblong, 7–11 cm long, 4.5–5.7 cm broad, (apex not seen), gradually rounded and shortly decurrent at base, darkened due to bad drying, but apparently of the same colour as var. *piriformis*, (greyish-green above, brownish green beneath), minutely pubescent on nerves and densely black dotted beneath, 7–9 nerved on each side, nerves prominent on both surfaces; petiole 4–5 mm long. *Panicle* terminal, pyramidal, often the lateral branches in the axils of adult leaves, 10–25 cm long or longer, brownish, puberulous and angular in the axis and branchlets when young, lateral pedicels about 3 mm long, mid-flower in the cyme sessile. *Flower bud* rhombical, about 11 mm long (including 3 mm long pedicelliform base), 6–7 mm in diam.,

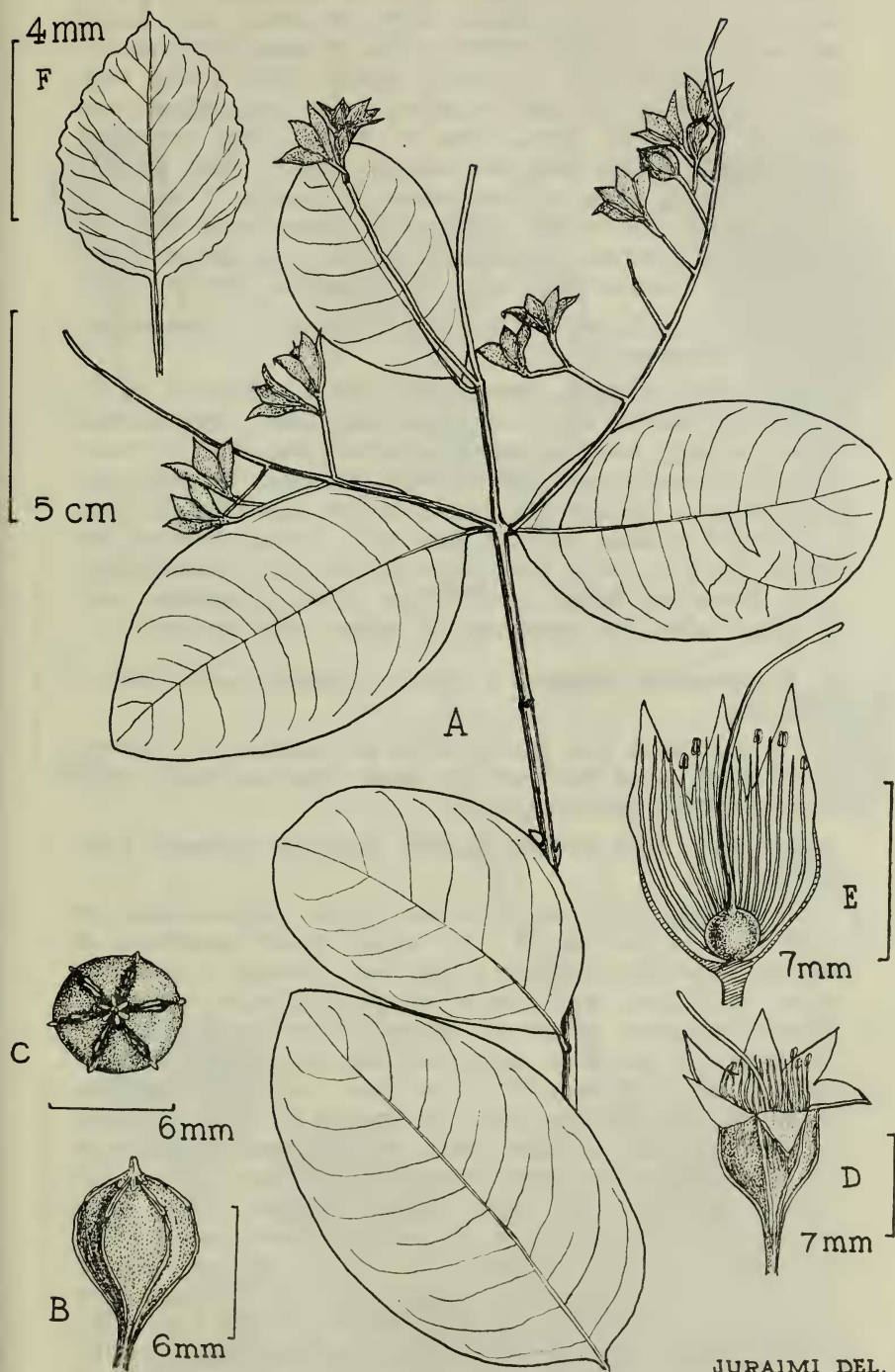


Fig. 19. *L. cristata* (A-F: Carr. 12,270 in SING — holotype).

A, Fertile twig. B-C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Petal.

prominently nipped at the apex; ridges 6, prominent straight in the calyx tube, slightly undulate above the sinus, much raised and sulcate near the apex, shortly callose between the sutures at the sepal tips to form a crest-like nipple about 1 mm long. *Calyx*: tube 9–11 mm long (including 3 mm long pedicelliform base), 6–7 mm in diam., lobes 6, 4 mm long, somewhat longitudinally folded along the margins outside. *Petal* broadly elliptic, abruptly acute at apex, sinuate in margin, 8 mm long, 4–5 mm broad with the claw 2–3 mm long. *Stamen* many subequal. *Ovary* ovate, glabrous, somewhat pustulate; style slender about 19 mm long. *Capsules* young only seen, veruculose, often pustulate.

PAPUA: Koitaki alt. 450 m (Carr 12,270: BM — **isoholotype**, SING — **holotype**).

This species is easily distinguished from *L. piriformis* in the flower-buds without the pedicelliform base being rhombical in outline, its ridges being prominent in the tube and above the sinus, raised and conspicuously sulcate near the apex, the sepal tips being callused between the sutures at the sepal tips to form a sort of a conical, 6-ridged crest with 6 bases between the sutures. From *L. callosa* which is much closer, this species differs in its flower-buds being slightly larger, distinctly apiculate, and its ridges raised and conspicuously sulcate near the apex.

18. *Lagerstroemia inopinata* Furtado et Montien spec. nov. — **Fig. 20.**

A *L. paniculata* haec species differt alis alabastri brevioribus, minus undulatis vel fere rectis, ad sinum haud auriculatis, secus suturam alatulis, linearis elevatis.

**Holotypus:** PHILIPPINE: Luzon, Bosoboso (Ahern's Coll. 204: A).

A tree, apparently not common. *Leaves* elliptic-oblong or ovate, 3.5–11.5 cm long, 2–5 cm broad, usually acuminate at the apex, curvedly narrowed to the base, greenish or greenish-brown and glabrous above, paler and glabrous below, sometimes sparsely pubescent on nerves, generally dotted dark beneath; 7–9 nerved on each side; petiole 2–5 mm long. *Panicle* terminal pyramid, 10–25 cm long, 8–12 cm broad; axis and branchlets deciduously and minutely velutinous, angular and slightly winged on the axis and branches, often bearing smaller deciduous leaf-like bracts, primary lateral branches 5–12 cm long. *Flower bud* broadly obtrullate with ridges slightly undulate in the tube, gibbose but not auriculate at the sinus, undulately raised along the suture, prominently nipped (1 mm long) at the apex; pedicel 2–3 mm long. *Calyx* funnel shaped, abruptly narrowed into pedicelliform base, 10–12 mm long (including 3 mm long base), 7 mm in diam., lobes 6, erect, 3 mm long, triangular, acute at the apex, thinly folded along the margin. *Petal* obovate, 9–10 mm long (with 1–2 mm long claw), 6–7 mm broad, shortly acute at the apex, undulate in the margin. *Stamens* 5–6 longer and thicker filamented, others many, shorter, subequal. *Ovary* ovate, glabrous, style long, slender.



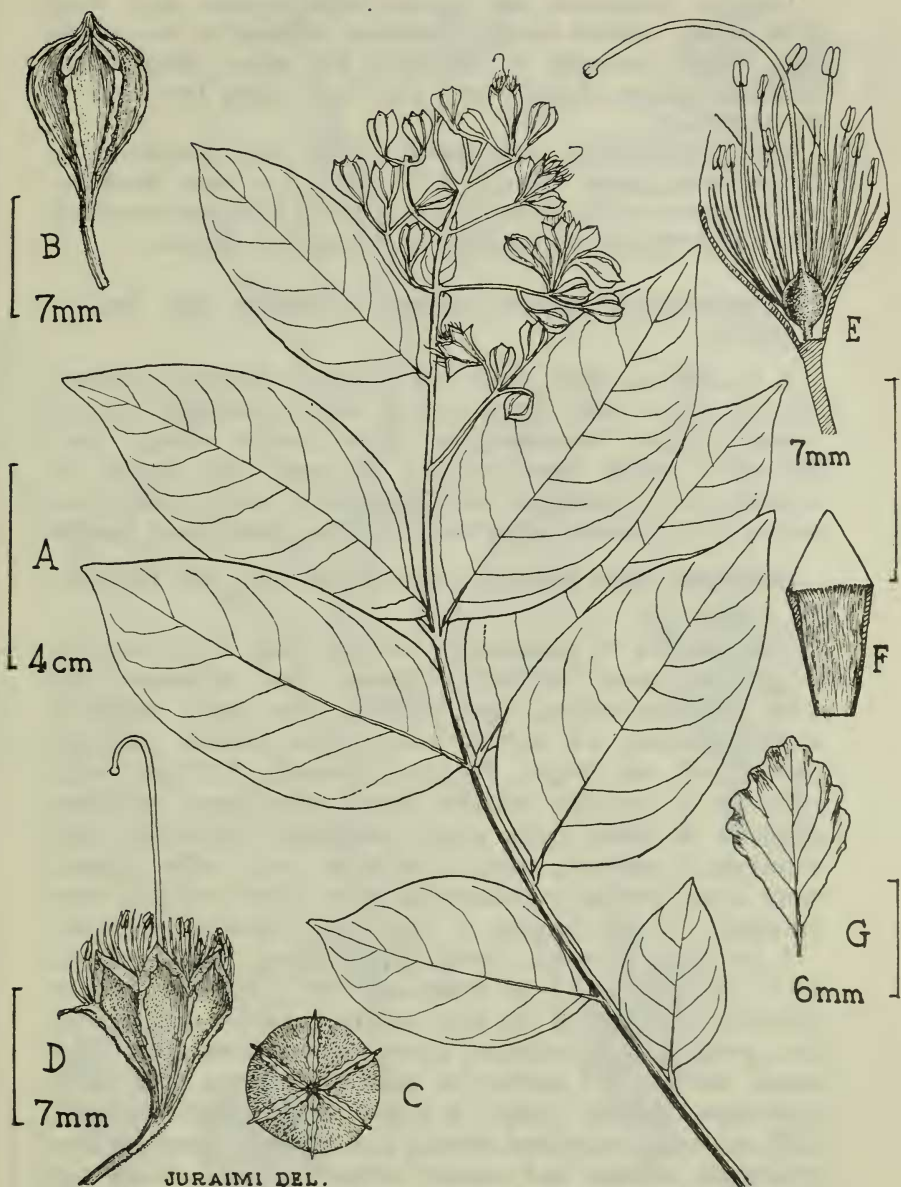


Fig. 20. *L. inopinata* (Ahern 204 in A — holotype).

A, Fertile twig. B-C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Part of calyx, interior view. G, Petal.

**PHILIPPINES:** Luzon, Prov. Rizal, loc. incert (Ahern's coll. 3,127: SING); Bosoboso (Ahern's coll. 204: A — **holotype** and UC — **isoholotype**); Prov. Tayabas, loc. incert (Varges 25,556: A).

From *L. paniculata* this species differs in the calyx wings being shorter, almost straight somewhat undulate in the younger buds, hardly enlarged at the sinus but never conspicuously auriculate though slightly raised and linear along both sides of the suture.

The specimens of this species have been distributed as *L. piriformis* except Ahern's 3,127 which has been distributed as *L. paniculata*. The former and its varieties have very superficial ridges as compared with *L. paniculata* and *L. inopinata*.

**19. *Lagerstroemia aruensis* Furtado et Montien spec. nov. — Fig. 21.**

A *L. alatulata* valde affinis, sed alabastro conspicue apiculato, ejusdem costis basin versus altiore alatis sinustisque, ex sinu sursum abrupte evanescentibus, secus suturas sulcatis haud incrassatis, sepalis apice, callosis vel non, haec species sat distincta. A *L. inopinata*, cui aliquantulum similis, differt haec species costis alabastri magis undulatis supra sinum haud elevatis.

**Holotypus:** Insula Kobroor, prope Djierlaj (Ned. Ind. For. Serv. bb. 25,424: A).

*Folia* elliptica vel lanceolata, 4–11.5 cm long, 2.5–5.5 cm lata, in partibus ramuli inferioribus minora, apice acuminata, basi acuta vel subrotundata, supra coffeata, infra badia, minute et dense punctulata, 6–8 nervata, nervis inferne deciduo puberulis; petiolus 4–8 mm longus. *Panicula* terminalis, 5–17 cm longa, cylindrica in ramulos laterales breves, paucifloros, puberulos, angulares et leviter alatos divisa. *Alabastrum* puberulum, basi cuneatum, 6 costatum, costis infra sinum paulo alatis, sinuatis, supra sinum abrupte evanescentibus secus suturas sulcatis, haud incrassatis, 10 mm longum, 5 mm diam., summo apiculatum.

A tree about 15 m tall. *Leaves* elliptic oblong, or ovate elliptic, 4–11.5 cm long, 2.5–5.5 cm broad, smaller in the lower part of branches, acuminate at the apex, acute or sub-rounded at base, dirty green or coffee coloured above, chestnut brown and black dotted beneath, 6–8 nerved on each side; nerves deciduously puberulous beneath; petiole 4–8 mm long. *Panicle* terminal, 5–17 cm long, cylindrical, shortly and remotely branched, grey puberulent, angular and slightly winged in axis. *Flower-bud* funnel shaped in the lower part, 10 mm long, 5 mm in diam.; ridges 6, undulate or crispate in the tube, somewhat gibbose at the sinus, evanescent in the suture, greyish brown velutinous with a short nipple about 0.5 mm long, often callose at apex between the sutures. *Calyx* 9–14 mm long, 5 mm in diam., ridges crispate or undulate, tube gradually cuneate into a 5–7 mm long base; lobes 6, thickened in the margin, patent. *Petal* ovate about 8 mm long (including 3 mm long claw) 4 mm broad,

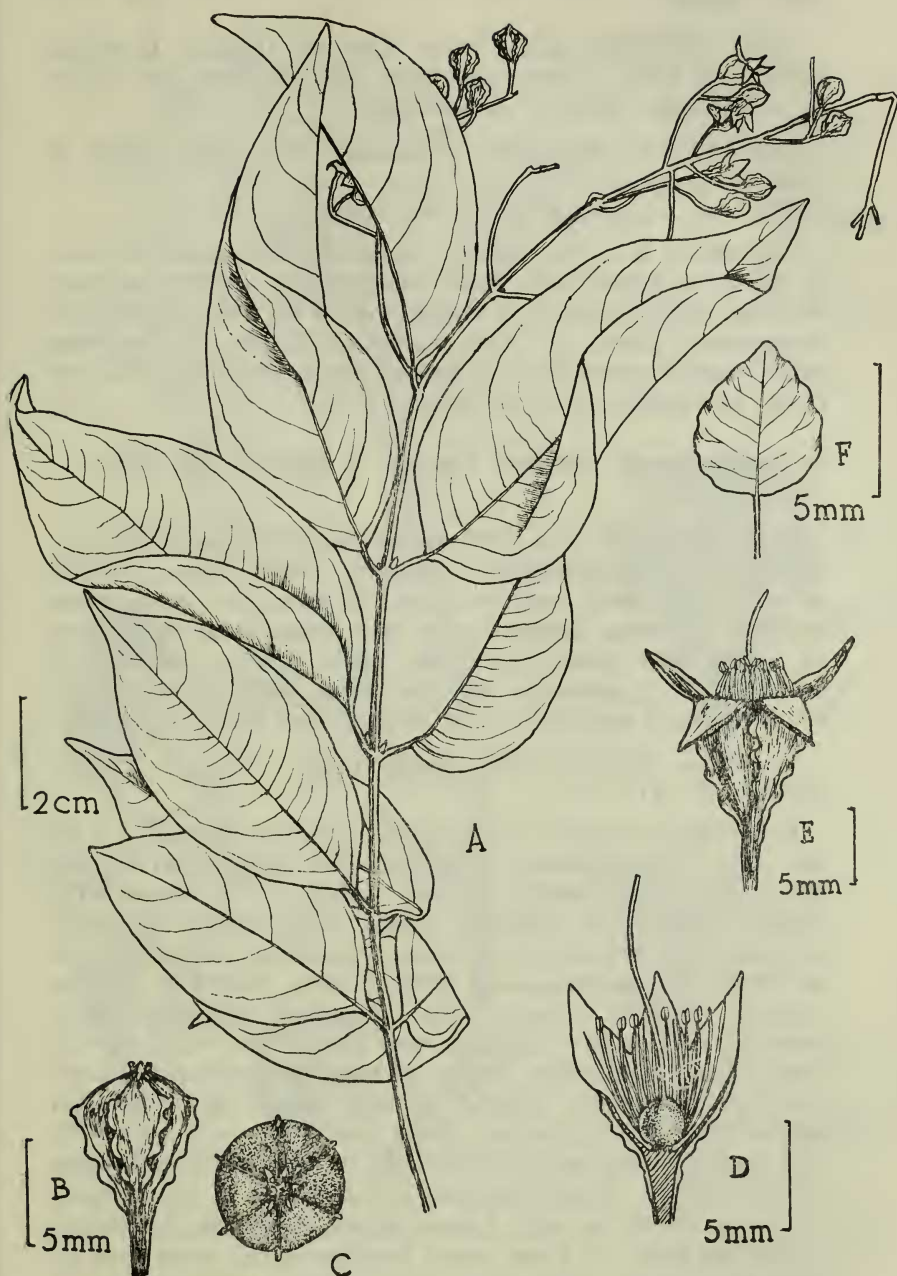


Fig. 21. *L. aruensis* (Neth. Ind. For. Serv. bb. 25,424 in A — holotype).

A, Fertile twig. B-C, Flower bud. D, Longitudinal section of flower. E, Flower after anthesis. F, Petal.

undulate in the margin. *Stamens* many, 3–6 thicker and longer filaments, others subequal. *Ovary* ovate with about 12 mm long style, glabrous.

ARU ARCHIPELAGO: Pulau Kobroor, Dijierlaj. (Buwalda 5,290: A & PNH — paratypes; Neth. Ind. For. Serv. bb. 25,424: A — **holotype**, SING — **isoholotype**).

MOLUCCAS: Halmahera, Gamsungi (Pleyte 199: PNH & SING — paratypes).

(The Aru Archipelago is near New Guinea).

This species is a close ally of *L. alatulata*, from which, however, it differs in flower buds being conspicuously nipped at apex, its ridges being broader and sinuate towards the base and abruptly disappearing above the sinus along the suture. *L. inopinata* which resembles somewhat this species, has its ridges conspicuously raised and sinuate above the sinus.

20. ***Lagerstroemia alatulata*** Furtado et Montien **spec. nov.** — **Fig. 22.**

Inter species cum foliis viridescentibus subtus fusco-punctulatis, inflorescentiis pyramidalibus, alabastris costis secus suturam elevatulis haud alatis haec species sat distincta; folii costa subtus interdum puberula, alabastris costis infra sinum alatis sinuatisque, ad sinum plus minusve gibbosis, secus suturam sulcatis vix incrassatis. A *L. paniculata* cui valde affinis, differt costis alabastris ad sinum haud auriculatis secus suturam non alatis nec elevatis.

**Holotypus:** PHILIPPINES, Insula Luzon, Provincia Laguna (Sulit 8,173: A).

*Folia* elliptico-oblonga vel lanceolata, 4.5–13 cm longa, 2.5–5 cm lata, acuta vel acuminata, in petiolum 4–6 mm longum breviter decurrentia, supra viridia, subtus pallidiora vel fuscescentia, utrinque glabra vel interdum subtus secus costam puberula, utrinsecus 7–9 nervata. *Inflorescentia* pyramidalis, 12–30 cm longa, densiflora, axi quadrangularis breviter alata, minute et deciduo velutina, bracteis foliaceis saepe praedita. *Alabastra* griseo puberula, ambitu late obtrullata, cum basi 9 mm alta, 5 mm in diam., alis 6, ad sinum paullo gibbosis saepe crispatis, haud conspicue auriculatis, inferne sinuatis, supra secus suturam incrassatulis sulcatis praedita. *Petala* cum 2 mm unguiculo 9–10 mm longa, 6–7 mm lata, suborbicularia, margine undulata. **Fructus** (Vidal 356 — C: A) late ellipticus, 15 mm longus, 11 mm in diam.

A tree 15–18 m tall. *Leaves* elliptic-oblong or lanceolate, 4.5–13 cm long, 2.5–5 cm broad (smaller in the lower part of inflorescence), acuminate or acute at the apex, shortly decurrent into petiole, green, slightly paler and brown dotted beneath, glabrous on both sides or deciduously puberulous in the midrib beneath, 7–9 nerved on each side; petiole 4–6 mm long. *Panicle* a densely flowered, terminal pyramid, 12–30 cm long, 8–18 cm broad, deciduously and minutely velutinous when young, angular and slightly winged in axis and branchlets, often bearing leaf-like



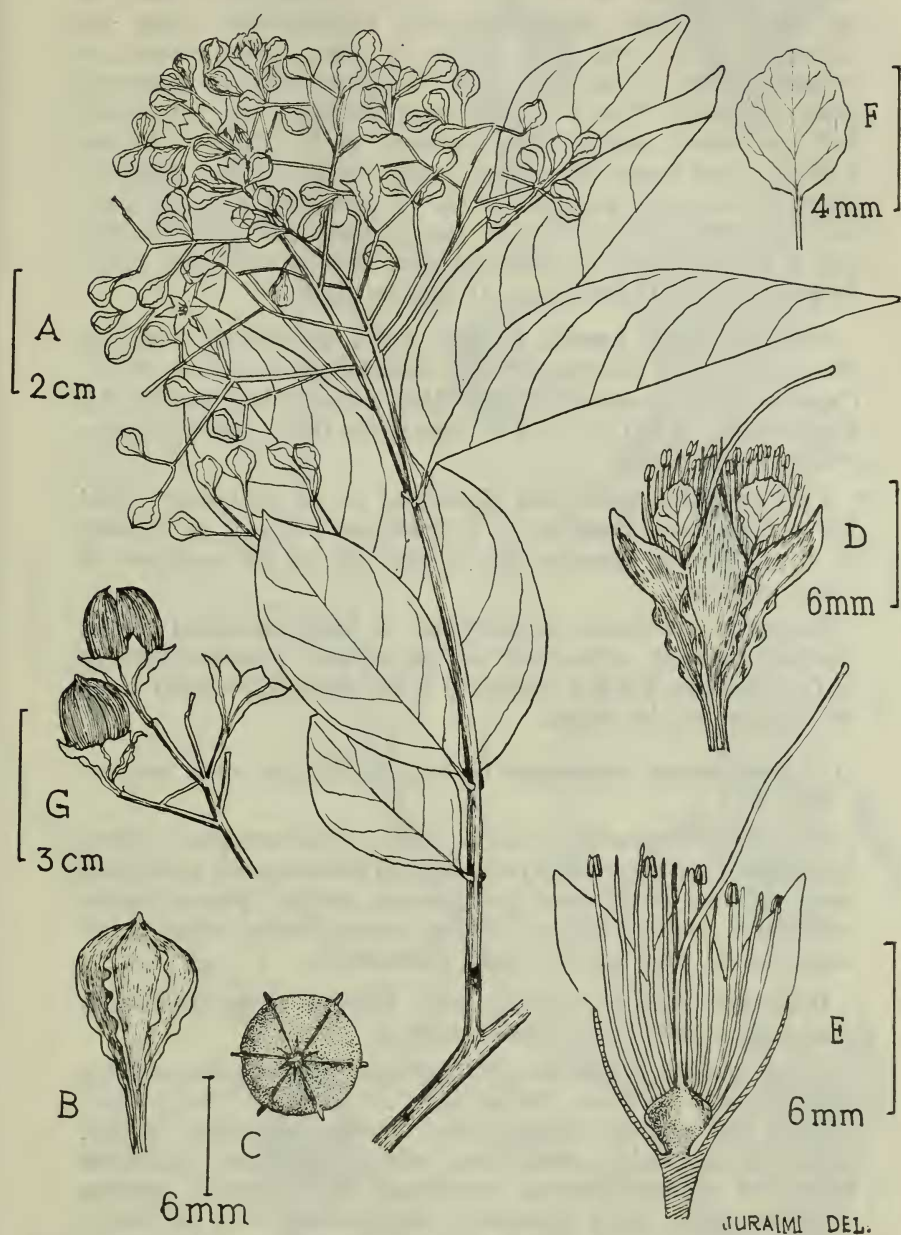


Fig. 22. *L. alatulata* (A-F: Sulit 8,173 in A — holotype; G: Vidal 356c in A).

A, Fertile twig. B-C, Flower bud. D, Flower. E, Longitudinal section of flower. F, Petal. G, Twig with capsules.

bracts. *Flower bud* 9 mm long (including 2 mm long pedicelliform base), 5 mm in diam., turbinate, grey puberulous; ridges 6, winged and sinuate in the tube, slightly gibbose and crispate at the sinus and very slightly thickened and furrowed along the suture. *Calyx* 10 mm long, 5 mm in diam., with crispate or undulate ridges; lobes 6, 3 mm long, very slightly thickened along the margin. *Petal* 9–10 mm long (including 2 mm long claw), 6–7 mm broad, suborbicular, undulate in the margin. *Stamen* 6 thicker and longer filamented, others smaller many, subequal. *Ovary* ovate, style glabrous, about 17 mm long. *Fruiting calyx* (in Vidal 346 c) 10 mm long, 11 mm in diam., narrowed abruptly into a pedicelliform 4.5 mm long base, lobe 6, spreading. *Fruit* broadly elliptic, 15 mm long, 11 mm in diam.

**PHILIPPINES:** **Luzon**, Laguna Prov. on Mount Makiling (Sulit 8.173: A — **holotype**; PNH — **isoholotype**, & 22.870: PNH); Cagayan Prov. (Bernardo: 20,449: BM); Albay (Vidal 784 bis: A). **Panay**, Hoilo (Vidal 356 c: A — **type** of the fruit). **Samar** (Ramos 1705: GH & SING).

The specimens have been distributed as *L. piriformis*; Vidal 784 bis has been identified as *L. batitanan* Vidal & so reduced to *L. piriformis*; however this is not one of the syntypes of Vidal's species.

Further *L. piriformis* is described to have superficial ridges, whereas the calyx ridges here are deeper and sinuate almost as in *L. paniculata*, but not auriculate at the sinus and winged along the margins of the sepals.

21. ***Lagerstroemia moluccana* Furtado et Montien spec. nov. — Fig. 23.**

Ad gregem specierum cum foliis viridescentibus subtus densissime nigro-punctulatis pertinens, sed inflorescentiis cylindricis, costis alabastri infra sinum leviter alatis, paullulo sinuatis, supra sinum late sulcatis, apicem obscure mammillatam versus sulcis angustissimis haec species facile distinguenda.

**Holotypus:** MOLUCCAS, in prov. Morotai prope Totodokoe (Tangkilian 108 = bb. 33,802: SING).

*Arbor*, ramulis hornotinis quadrangularis, minute pubescentibus, secus angulas alatulatis. **Folia** 5–11 cm longa, 2.5–5 cm lata, elliptica vel oblongo-elliptica, basi breviter angustata, glabra, supra viridia lucida glandulosa, subtus pallidiora densissime fusco vel nigro-punctulota, utrinsecus 5–8 nervosa; petiolus 5–9 mm longus, supra applanatus. **Inflorescentia** 7–15 cm longa, cylindrica, breviter ramulosa; ramuli pedunculi pedicellique eodemodo pubescentes et angulati; pedicelli circa 7 mm longi. *Alabastra* 7–9 mm longa, 5–6 mm lata obovata obscure mammillata vel non, 6-costata, costis infra sinum brevissime alatis, paulo sinuatis, supra sinum late sulcatis, sulcis apicem versus angustissimis. *Calyx* abrupte in pedicelliformem basin 3 mm longam angustatus, tubo circa 7 mm longus, 7 mm in diam., minute griseo pubescens, lobis reflexis, 3–4 mm longis secus

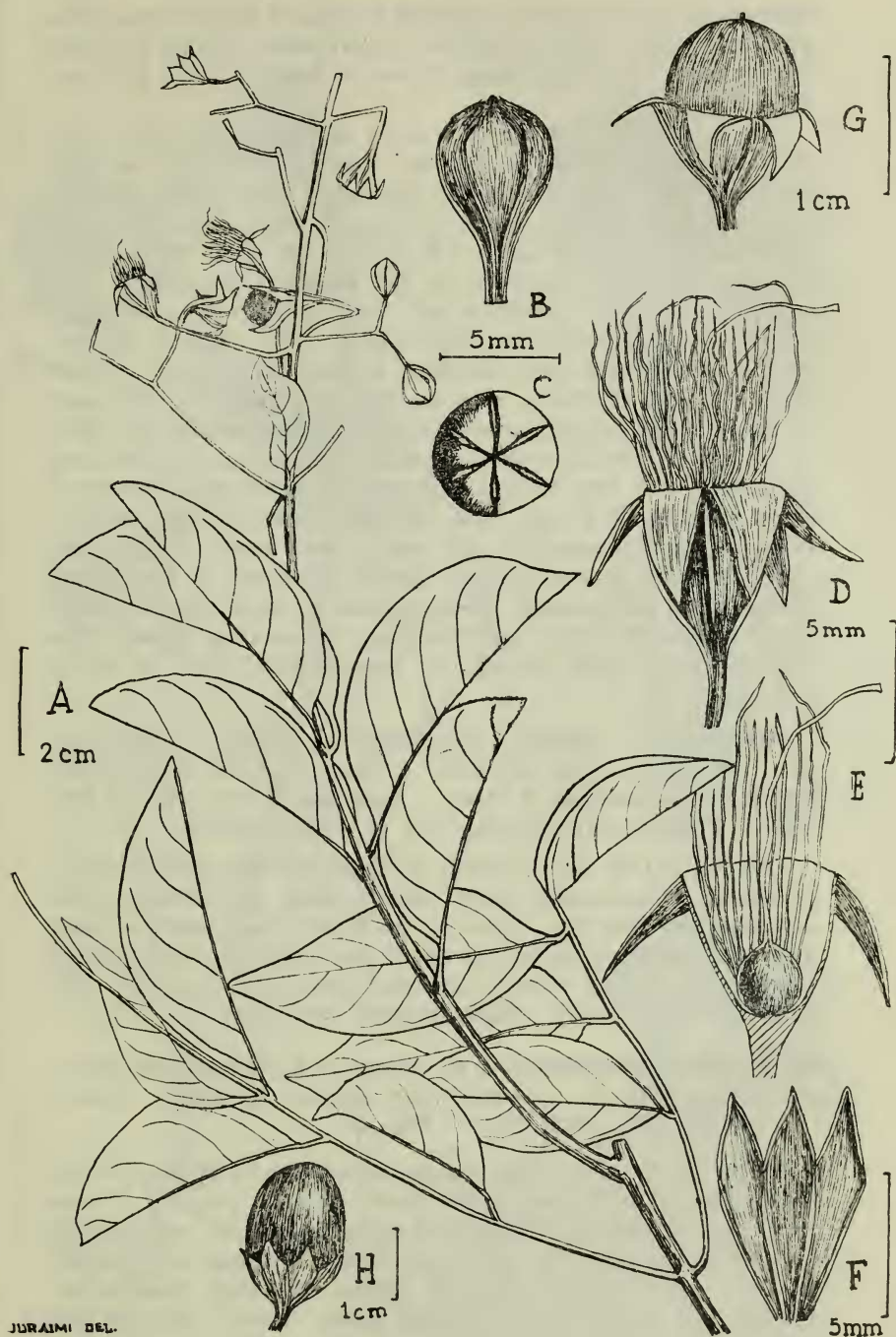


Fig. 23. *L. moluccana* (Tangkilian 108 = bb. 33,802 in SING — holotype).

A, Fertile twig. B-C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Part of calyx, exterior view. G-H, Capsule.



marginem paulo incrassatis. *Stamina* 6 longiora et crassiora, altera subequalia, plura. *Calyx fructiferus* pateriformis, 12 mm in diam., lobis reflexis. *Capsula* oblonga 16 mm in longa, 13 mm in diam., 5-valvata.

A tree 22–30 m high. *Leaves* 5–11 cm long, 2.5–5 cm broad, oblong or elliptic oblong, acuminate or acute at the apex, curvedly narrowed and shortly angustate at base, dark green, shining, minutely gland dotted above, paler and black dotted beneath, glabrous on both surfaces; 5–8 nerved on each side; petiole 5–9 mm long, flat, furrowed in the middle. *Inflorescence* 7–15 cm long, minutely pubescent all over, cylindrically branched; branchlets and peduncles quadrangular with shortly winged; pedicel about 7 mm long, similarly angled. *Flower bud* 7–9 mm long, 5–6 mm in diam., obovate, shortly nipped at the apex, 6 ridged; ridges slightly undulate, broadly furrowed at the sinus above. *Calyx* tube abruptly narrowed into the base, 10 mm long (including 3 mm long base), 7 mm broad, minutely grey pubescent; lobes reflexed, 3–4 mm long, slightly thickened into margin. *Petal* rhomboidal about 9 mm long, 4 mm broad, acute at the apex, undulate in the margin. *Stamen* subequal, 6 longer and thicker ones, others many. *Ovary* globose or ovate. *Fruiting calyx* adpressed to the fruit, saucer-shaped, 12 mm in diam., lobes reflexed. *Fruit* short oblong, 16 mm long, 13 mm in diam., 5-valved.

MOLUCCAS: Morotai, Totodokoe at Tobelo (Tangkilian 14 = bb. 33,726: PNH & SING & No. 108 = bb. 33,802: BM & PNH — **isoholotypes** & SING — **holotype**, & 205 = bb. 33,878: SING); Totodokoe (Kostermans 614: A, PNH & SING).

This taxon falls into a group of *Pterocalymma* species having cylindrical inflorescences, green leaves which are densely black dotted below, and the ridges of the flower bud hardly winged and nearly straight below the sinus, but is readily distinguished in having its ridges broadly furrowed above the sinus but soon narrowed and closely sulcate towards the apex.

22. *Lagerstroemia koehneana* K. Schum. in K. Schum. and Holtr., Fl. Kais.-Wilh.-Land (1889) 85: Koehne in Engl., Pflanzr. 17 — IV. 216 (1903) 266. — **Fig. 24.**

A tree up to 42 m high. *Leaves* lanceolate or elliptic-oblong, sometimes sub-orbicular in the lower part of twigs, 7–10 cm long, 3–4.5 cm broad, acuminate or acute at the apex, sub-rounded or shortly narrowed at the base, slightly bicolourous greenish at first, later turning greenish brown, minutely puberulous, densely and minutely gland dotted above, densely black dotted below; 6–9 nerved, nerves more prominent above; petiole 3–5 mm long. *Panicle* terminal sub-pyramidal with short and distant lateral branches 10–25 cm long, 8–25 cm broad; axis minutely velutinous when young, angular and slightly winged; bracteoles greenish, largest 5 mm long, deciduous. *Flower bud* 12–18 mm long (including 5–7 mm long pedicelliform base), 7 mm in diam., turbinate, 6 ridged, apiculate, whitish puberulous when young,



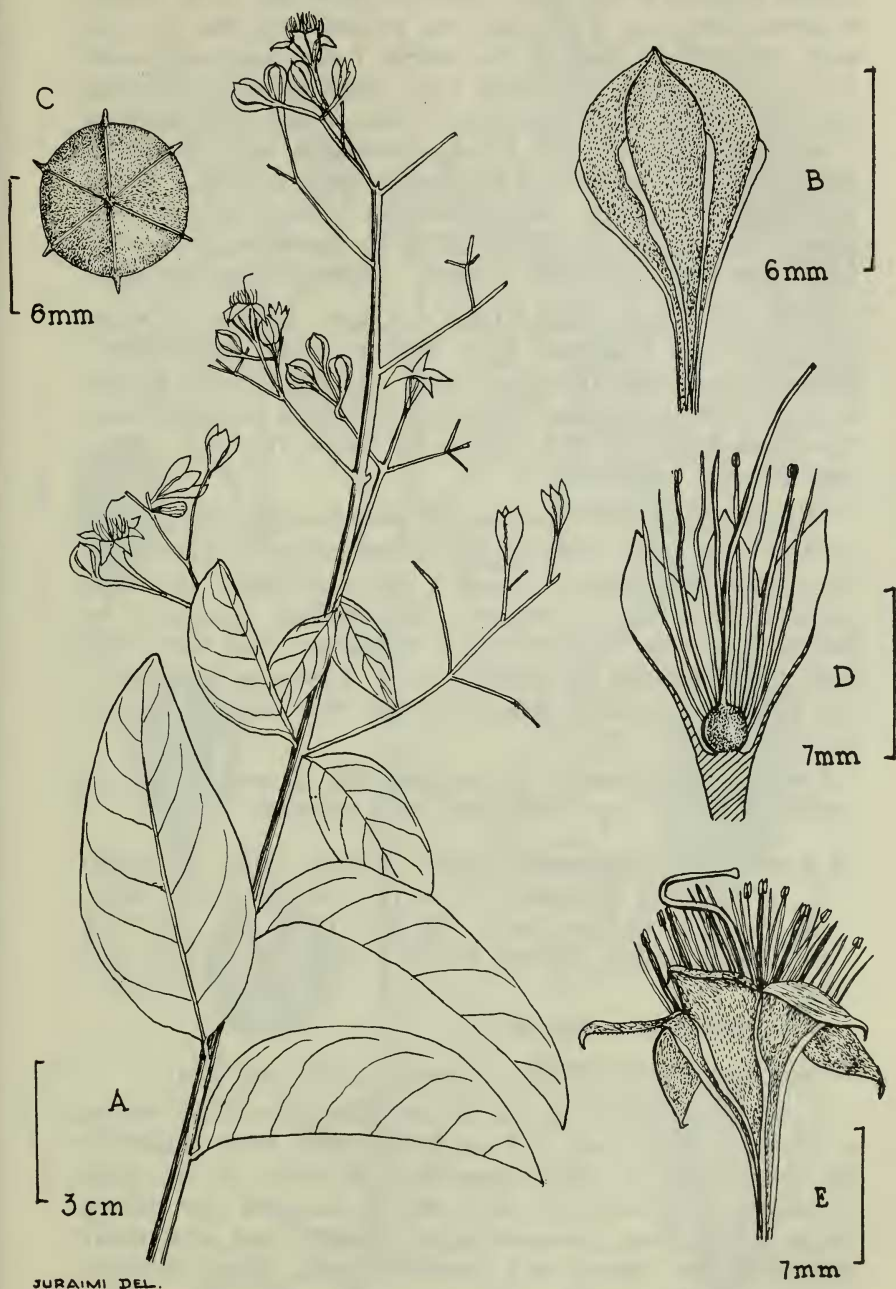


Fig. 24. *L. koehneana* K. Schum (Darbyshire & Hoogland 8,037. SING).

A, Portion of an inflorescence. B-C, Flower bud. D, Longitudinal section of flower. E, Flower after anthesis.

yellowed later; ridges darker, 6 ridged, somewhat winged and slightly undulate in the tube, evanescent above the sinus; pedicel of lateral flowers  $\pm$  5 mm long and pedicelliform base 4–5 mm long, pedicelliform base of the middle 7 mm long and sessile flower, nipple about 1 mm long. *Calyx* lobes patent, 5 mm long, slightly thickened along the margin. *Petals* 10 mm long (including 3 mm long claw), 7 mm broad, suborbicular with a slightly acute at the apex, undulate in the margin. *Stamens* many, 6 thicker and longer filamented, others subequal. *Ovary* obovate with about 17 mm long style, glabrous. *Capsule* (according to Koehne) 13–15 mm long, 10–13 mm in diam., oblong-globose, apiculate.

NEW GUINEA: **Sepik Distr.**, Aitape Subdistr., Goiniri (Darbyshire and Hoogland 8,037: BM, E, LAE, PNH, SING). **Madang Distr.**, Sein (Hoogland 4,868: A, BM, LAE); Koropa in Ramu Valley (Hoogland 5,073: A, LAE); Silau in Gogal Valley (Hoogland 4,908: A, BM, LAE); loc. incert (leg? s.n.: A — **clastoholotype** apparently).

The portion quoted above as the clastoholotype (part of the holotype) was taken from the Berlin Herbarium by Koehne for his private herbarium. It bears a piece of paper on which "Lagerstroemia sp." is written, and identified apparently by Schumann first as "*L. fordii* Oliver et Koehne", and then it has been crossed to name the specimen as "*L. koehneana* Schumann". The holotype was from former German New Guinea collected by Hollrung No. 704.

Koehne had apparently accumulated bits of many authentic specimens for his own herbarium on Lythraceae.

23. **Lagerstroemia piriformis** Koehne in Engl. Jahrb. IV (1883) 23 and in Engl. Pflanzenr. 17 = IV 216 (1903) 267; Merr. and Rolfe in Philipp. Journ. Sci. III (1908) Bot. 116 excl. syn.; Merr., Enum. Philipp. Pl. III (1923) 137 pp. and excl. syn.

forma **piriformis** — **Fig. 25.**

**Holotypus:** PHILIPPINES: (Cuming 1,675, not seen).

A tree about 15–20 m tall. *Leaves* elliptic or elliptic-oblong or ovate, 3–12 cm long, 2–5 cm broad (often much smaller in the lower part of twigs), acuminate or acute at the apex, cuneate or sub-rounded at base, shortly decurrent into petiole, greyish green above, brownish green, minutely and deciduously puberulous on nerves and minutely dark dotted beneath, undulate in the margin, 6–9 nerved on each side; petiole 2–4 mm long. *Panicle* terminal, pyramidal, 7–20 cm long, 7–15 cm broad, minutely grey velutinous, angular and slightly winged in the axis and branchlets when young. *Flower bud* 9–12 mm long (including 3–5 mm long pedicelliform base), 5 mm in diam.; obscurely nipped at apex; ridges 6, superficial, straight in developed buds, somewhat angular earlier in the

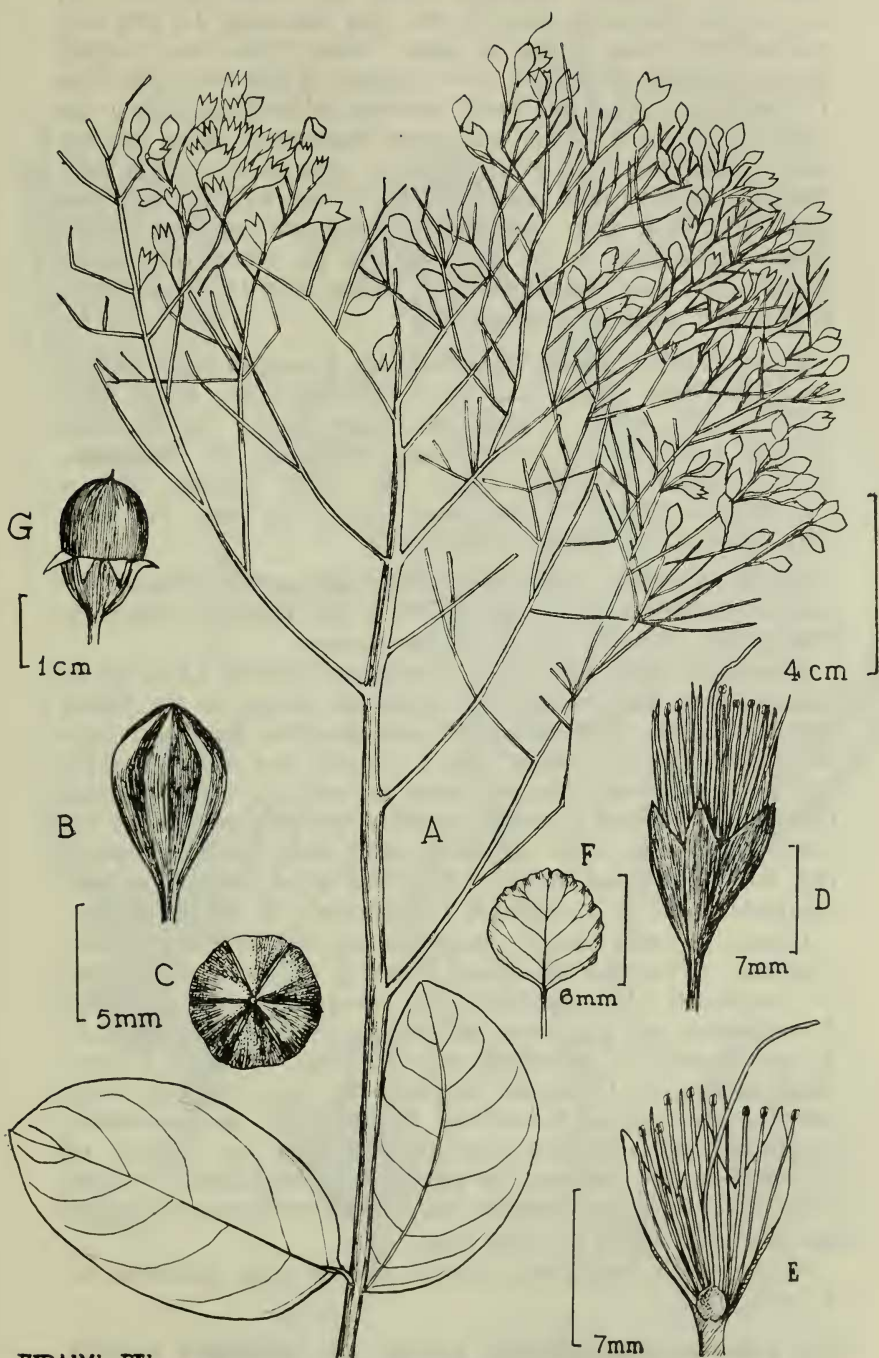


Fig. 25. *L. piriformis* Koehne form. *piriformis* (A-F Sulit 14,565: A; Wenzel 1,459: A).

A, Fertile twig. B-C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Petal. G, Capsule.



lower parts, slightly thickened along the suture on the top, very slightly furrowed. *Calyx* 8 mm long (including 3.5 mm long pedicelliform base), 5 mm in diam.; lobes 3 mm long, slightly thickened along the margin. *Petal* obovate, 6 mm long (including 1–2 mm long claw), 4 mm broad, fimbriate or much undulate in the margin. *Stamens* 6 thicker and longer filamented, others smaller, many, subequal. *Ovary* ovate, glabrous; style about 15 mm long. *Fruiting calyx* 10 mm long (including 4 mm long pedicelliform base), 10 mm in diam., narrowed abruptly into the base, slightly ridges and straight in the lower half of the tube; lobes patent or reflexed. *Capsule* broadly elliptic, 15 mm long, 11 mm in diam., prominently nipped (2 mm long).

PHILIPPINES: **Samar**, Catarman, Mt. Cansayao (Sulit 14,565: A, BM, PNH). **Leyte**, loc. incert. (Wenzel 297: A, E, GH, 1,254: A, GH; 1,459: A, BM, GH; Franco 25,759: A); Tacloban (Wenzel 1,653: SING); Palo (Elmer 7,128: A, E). **Mindanao**, Prov. Cotabato (Ferraris 23,038: A); Prov. Surigao (Ramos and Pasgasio 34,776: A, Mallonga 27,001: A); Prov. Davao at Mati (Ramos and Edano 48,974: UC).

Sterile specimens representing young new growth collected by Conklin under nos. 39,195 and 39,234 at Mt. Yagaw, E. Mindoro, Philippines, probably belong to this species.

Though we have not seen the holotype (Cuming 1,675) or its duplicates, we have ventured to typify the species on the details given by Koehne (1883 and 1903) who described the flower buds as *piriform*, *slightly costate with a rounded, not apiculate apex*. Specimens answering this description are many in the Philippines though it is difficult to decide whether the type represented the *batitinan* form or what we have called here forma *piriformis* (e.g. Sulit 14,565 and Wenzel 1,653). But other forms have been separated either as varieties of *L. piriformis* or definite species.

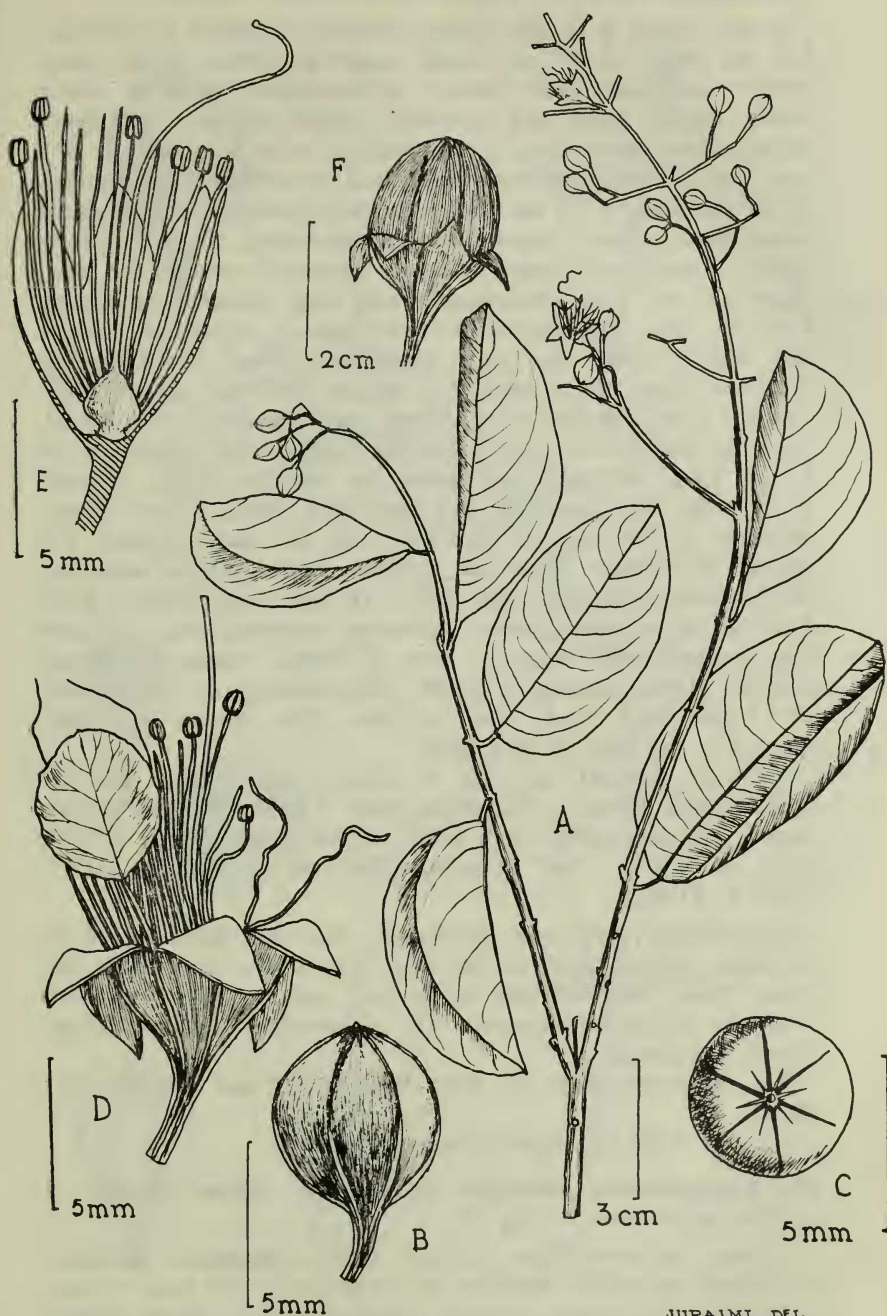
It may be noted that *L. piriformis* and its varietus or forms (*batitinan*, *callosa* and *valleculata*) as well as the species *L. cristata*, *L. inopinata*, *L. crassifolia*, *L. borneensis*, *L. alatulata*, *L. moluccana* and *L. aruensis* are closely allied and are linked to *L. pterosepala*, *L. paniculata* and *L. crispa* to form a large macro-species. *L. koehneana* seems to fall also into this group, but it has much larger flower buds. Similarly vars. *novoguineensis*, *riedeliana* and *apiculata* and perhaps also var. *minor* of *L. ovalifolia* may fall into this group. A thorough study of these forms based on better flowering and fruiting specimens are needed to clarify the status of these taxa.

Merrill (1923) including under this species some specimens of *L. paniculata*.

23a. **Lagerstroemia piriformis** Koehne var. **valleculata** Furtado et Montien var. nov. — Fig. 26.

A var. **piriforme** haec varietas facile distinguitur alabastri haud apiculati costis secus suturas applanatis haud incrassatis, mature valleculatis infra sinum paullo prominentibus rectis, inflorescentiis fere cylindricis.





JURAIMI DEL.

Fig. 26. *L. piriformis* Koehne var. *vallecullata* (A-E: Carr. 12,043 in SING—holotype; F: Carr. 12,628 in SING).

A, Fertile twig. B-C, Flower bud. D, Flower. E, Longitudinal section of flower. F, Capsule.

**Holotypus:** PAPUA: Koitaki (Carr 12,043: SING).

A tree about 9 m tall. *Leaves* oblong or elliptic or obovate, 5–8 cm long, 2.5–4.5 cm broad, acute or obtuse at the apex, rarely acuminate, dark brown or sometimes greenish above (badly dried), paler and minutely dotted beneath with lower midrib often puberulous, 6–8 nerved on each side; petiole 3–5 mm long. *Panicle* terminal, cylindrical or obscurely pyramidal, 10–30 cm long, 4–10 cm broad, brown puberulous; pedicels of lateral flowers short, about 2 mm or more long, the mid flowers sessile, *Flower bud* clavate, abruptly narrowed towards the base, about 10 mm long (including 3 mm long pedicelliform base), 5 mm in diam., not nipped at apex; ridges 6, superficial, straight and angular below the sinus, evanescent above, not raised or thickened along the suture, but broadly furrowed on maturity. *Calyx* 8 mm long (including 3 mm long base), 5–6 mm broad, larger in mid-flowers (about 12 mm long, 6 mm broad); lobes 4 mm long, not thickened along the margins. *Petal* obovate, 10–11 mm long (including 3–5 mm long claw), 5 mm broad, undulate in the margin, decurrent into the claw. *Stamen* 3–6 thicker and longer filamented, others smaller, many, subequal. *Ovary* ovate, glabrous with about 18 mm long slender style. *Fruiting calyx* saucer-shaped, abruptly narrowed into 3–5 mm long pedicelliform base, 12 mm in diam., ridges superficial, straight; lobes patent. *Capsule* short-oblong or subglobose, 15–17 mm long, 12–14 mm in diam., light brown in colour, nipped at the apex (1 mm long).

PAPUA: Koitaki, alt. 450 m (Carr 12,043: A & BM — **isoholotypes**; SING — **holotype**; Carr 12,628: BM & SING); Sogeri (Heather 2,806: A & LAE). Olive Ridge (Millar 23,520: LAE & SING). Port Moresby (Eddowes & Kumul 13,081: LAE & SING).

This variety, like var. *piriformis*, has superficial ridges in the tube and no apex in the bud, but differs from it in the flower buds flattened, not thickened, and broadly channelled along the sutures when mature. The inflorescence is subpyramidal, almost cylindrical.

The specimens have all been badly dried and became very black.

Heather 2,806 has slightly elongate fruits.

23b. ***Lagerstroemia piriformis* Koehne var. *callosa* Furtado et Montien var. nov. — Fig. 27.**

A var. *piriforme* haec varietas facile distinguitur alabastro calviforme, apice fere truncato vel rotundato, costis basin versus, conspicuis, ad sinum utrinque evanescentibus, prope apicem elevatis sulcatis, sepalis inter suturas apice callosis.

**Holotypus:** PAPUA: Maipa (Darbyshire 928: LAE).

A tree about 18 m tall. *Leaves* elliptic or broadly elliptic or obovate-elliptic, 5–10 cm long, 2.5–4.5 cm broad, lower leaves in a twig often smaller, acuminate or acute or sometimes obtuse at apex, shortly narrowed at base, glabrous, shining and green

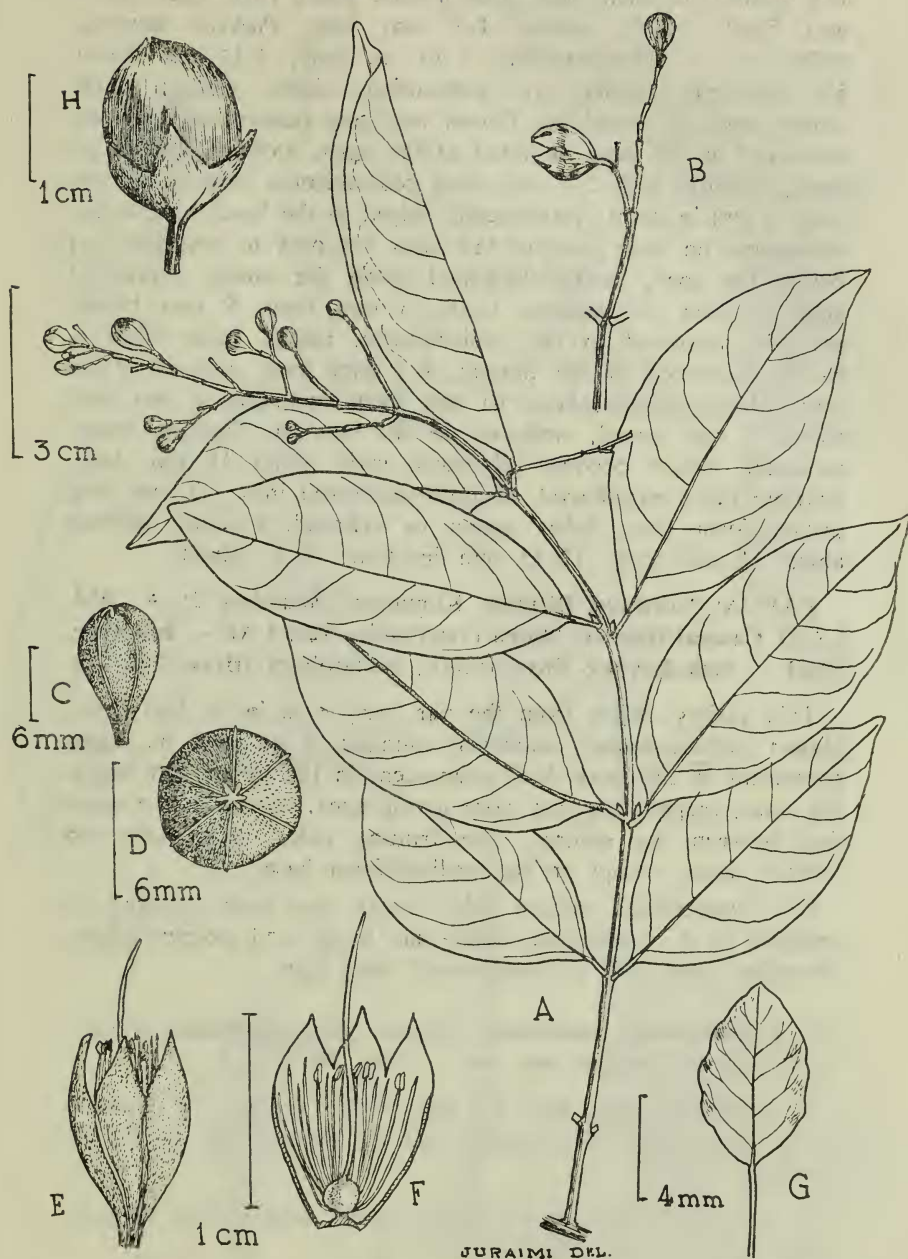


Fig. 27. *L. piriformis* Koehne var. *callosa* (A-G: Darbyshire 928 in LAE — holotype; H: Saunder 2 in A).

A, Fertile twig. B, Part of inflorescence. C-D, Flower bud. E, Flower after anthesis. F, Longitudinal section of flower. G, Petal. H, Capsule.



above, paler, densely dotted and puberulous at the nerves beneath, 6–9 nerved on each side; dots minute green first, later brown and finally black; petiole 4–7 mm long. *Panicle* terminal, cylindrical or sub-pyramidal, 5–30 cm long, 3–15 cm broad, few flowered, minutely grey puberulous, slightly winged in the young axis and branchlets. *Flower bud* grey puberulous, abruptly narrowed in the base, rounded at the apex, globose without its basis, together with 2–3 mm long pedicelliform base, 8–10 mm long, 6 mm in diam., prominently ridged in the basal half, ridges evanescent on both sides of the sinus but only to reappear just before the apex, hardly thickened along the suture, callose at apex between the sutures. *Calyx* 6 mm long, 5 mm broad, abruptly narrowed to the pedicelliform, ridged base; lobes 6, hardly thickened in the margin, 4–5 mm long, reflexed. *Petal* short oblong-elliptic about 10 mm long (including 4 mm long claw), 5 mm broad, undulate in the margin. *Stamens* many, subequal. *Ovary* obovate, glabrous; style about 18 mm long. *Fruiting calyx* cup-shaped, abruptly narrowed into 3–7 mm long pedicelliform base; lobes patent or reflexed. *Capsule* globose about 15 mm long, 12–13 mm in diam., 4–5 valved.

**PAPUA: Northern District:** Komabun (Saunders 2: A, BM, LAE). **Central District:** Maipa (Darbyshire 928: LAE — **holotype**, PNH — **isoholotype**); Prov. incert., Budatobara (Brass 748: A).

This variety differs from the var. *piriformis* in its bud being almost balloon-shaped, somewhat rounded at its apex, its ridges prominent in the basal half, evanescent in the upper half below the sinus, reappearing just close to the apex, callose at the sepal tips between the sutures. The fruiting calyx also shows no distinct ridges except on the pedicelliform base.

On geographical ground this variety has been referred in herbaria to *L. koehneana* which has larger and deeper ridges, obtrullate buds with a conspicuously long apex.

**23c. *Lagerstroemia piriformis* Koehne forma *batitinan* (Vidal) Furtado et Montien stat. nov. — Fig. 28.**

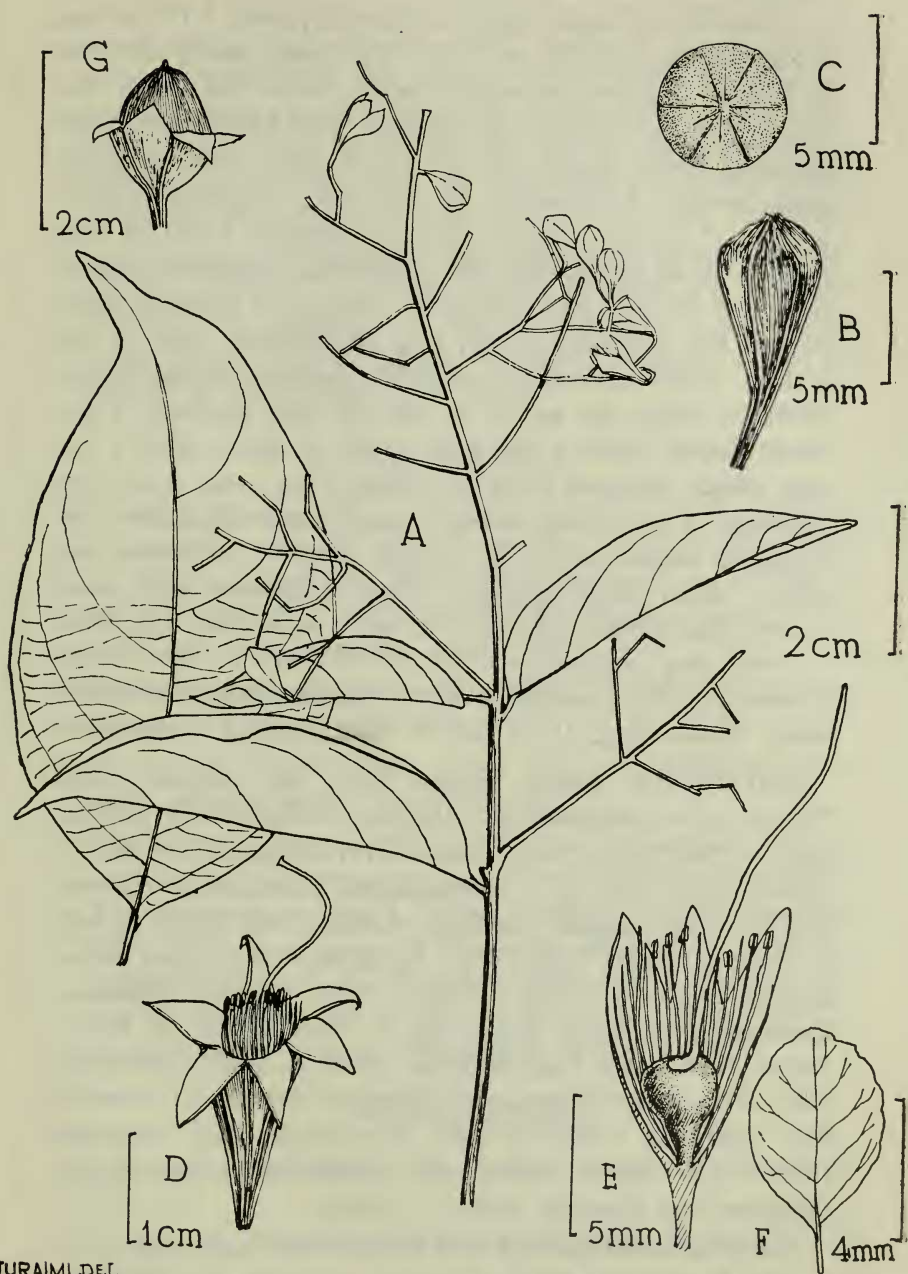
*L. batitinan* Vidal, Rev. Pl. Vasc. Filip. (1886) 139; Koehne in op. cit. (1903) 267; Ceron, Cat. Pl. Herb. Filip. (1892) 85 **basinym**.

*L. hexaptera* Mig. *sensu* F.-Vill., Noviss. App. (1880) 92 p.p.; Vidal, Sinops, Atlas (1883) 27 t. 50 fig. A.

*L. piriformis* Koehne sec. Merr. et Rolfe in Philipp. Journ. Sci. III (1908) 116 p.p.; Merr. Enum. Philipp. Pl. III (1923) 137 p.p.

A *L. piriforme* forma *piriforme* hoc taxon recedit alabastro minore obscurissime apiculato vel non, ejusdem tubo obconoideo quam cupola pyramidalis vel quam pedicelliformis basis subduplo longiore, costis basin versus altioribus interdum leviter sinuatis, costis calycis fructiferi eodemmodo instructis.





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Fig. 28. *L. piriformis* Koehne forma *batitanan* (A-F: Vidal 356 bis in A — lectoholotype; G: Williams 2,497 in GH).

A, Fertile twig. B-C, Flower bud. D, Flower after anthesis. E, Longitudinal section of flower. F, Petal. G, Capsule.

**Lectoholotypus:** PHILIPPINES: **Luzon**, Prov. Laguna, prope San Antonio (Vidal 356 bis: A).

A tree 5–20 m high. *Leaves* lanceolate or ovate, 5–16 cm long, 3–5 cm broad, acuminate or obtuse at the apex, shortly decurrent at base, at first grey puberulous on the midrib and nerves later glabrous on both surfaces, densely black dotted beneath, minutely glandular above, usually grey or greyish green above, brownish green beneath; 6–12 nerved on each side, prominent beneath; petiole 4–7 mm long. *Panicle* terminal pyramidal, 10–30 cm long, 5–20 cm broad, deciduously grey puberulous, angular and slightly winged in the axis and branchlets. *Flower bud* turbinate about 10 mm long (including 2 mm long pedicelliform base), 5 mm in diam.; ridges 6, prominent, or slightly undulate, straight, slightly thickened along the suture on the top and furrowed. *Calyx* funnel shaped, about 9 mm long, 6 mm in diam.; lobes 3 mm long, slightly thickened along the margin. *Petal* ovate, 8 mm long (including 2 mm long claw), 5 mm broad, undulately and irregularly denticulate in the margin. *Stamen* 3–6 thicker and longer, others many subequal. *Ovary* subglobose with about 15 mm long slender style. *Fruiting calyx* cup-shaped with about 3–4 mm long pedicelliform base, 10–12 mm in diam., much prominently ridged, straight or slightly undulate. *Fruit* short-oblong about 15 mm long, 11–12 mm in diam., nipped at the apex.

PHILIPPINES: **Luzon**, Laguna Prov., San Antonio (Vidal 356 bis: A — **lectoholotype**), Makiling National Park (Salvoza 1,005 = PNH 3,223: PNH). Tayabas Prov. (Jillran 25,659: SING), Unisan (Vidal 784: A — **lectoparatype**), Guinayangan (Escritor 20,832: SING). **Samar** (Sherfese, Cenabre and Cortes 21,049: A, BM); I. Parasan (Vidal 784C: A). **Leyte**, Ormoc, Lake Danao (Edano 2,335 = PNH 11,964: PNH, SING). **Mindanao**, **Zamboanga** del Norte (Frake 866 = PNH 38,422: A, PNH); Davao Prov., Santa Cruz (Williams 2,947: A, GH), Zamboanga Distr. (Foxworthy, Demesa and Villamil 13,907 bis: E); Misamis Prov. (Miranda 17,981: A, GH); Zamboanga Distr., Malangas (Ramos and Edano 37,399: A); Agusan Prov., San Roque (Mendoza and Convocar 10,415: A, PNH).

This forma is distinguished from the type form (forma *piriformis*) by its flower-buds being obscurely apiculate, its pyramidal cupola being almost equal to its pedicelliform base but about half the size of the bud's obconoidal part representing the calyx tube, its ridges being distinctly higher and sometimes slightly sinuate especially in the lower part both in the flower bud and in the fructiferous calyx.

Fernandex-Villar included also *L. paniculata* under this.

Vidal 356 bis has been erroneously cited as 365 bis by Koehne and Merrill and Rolfe, but Ceron gives the number 356 bis, as written on the specimen's label. Under *L. hexaptera* only Vidal's specimen from San Antonio in the Laguna Province was cited without any number both by Fernandex-Villar and by Vidal. The syntypes Vidal 356 bis and 784 are not represented in the Philippine Herbarium and so we have selected the lectoholotype out of the duplicates distributed in 1959 from the Philippines.

According to a note from the Herbarium of the Botanic Gardens, Madrid, Vidal 784C from Samar Prov. is identified as *L. batitinan*, but neither this number nor its locality was included in the protolog of the species nor in Ceron's Catalogue; hence it cannot be included as the syntype of the species.

### Sect. **Adambea**

Section **Adambea** DC. in Mem. Sect. Helv. III, 2 (1826) 70 et Prodr. III (1828) 93; Miq., Fl. Ind. Bat. I (1855) 623 (subgen) p.p.; Bl. Mus. Lugd. Bat. II (1856) 126 (subgen.) p.p.; Clarke in Hk. f. Fl. Brit. Ind. II (1879) 577 p.p. (ex altera parte = Sec. *Trichocarpidium*, etc.) **stat. nov.**

*Munchhausenia* Koehne in Engl. Jahrb. IV (1883) 15 et. Engl., Pflanzenr. 17 = IV. 216 (1903) 260.

Calyx with distinct ridges, ridges twice the number of sepals; sepals glabrous within. Ovary glabrous.

Section *Munchhausia* DC. (1826) was created for species having no ridges on the calyces and was based on a misidentification of *Munchhausia speciosa* L. with *L. indica* L. and *L. grandiflora* Roxb. which is a species of Duabanga. Blume (1856) excluded *L. speciosa* L. (sensu *L. indica*) from the section or subgenus and reserved it entirely for *L. grandiflora* Roxb. As restricted by Koehne, *Adambea* is the oldest name for the section.

### Subsection **Adambea**

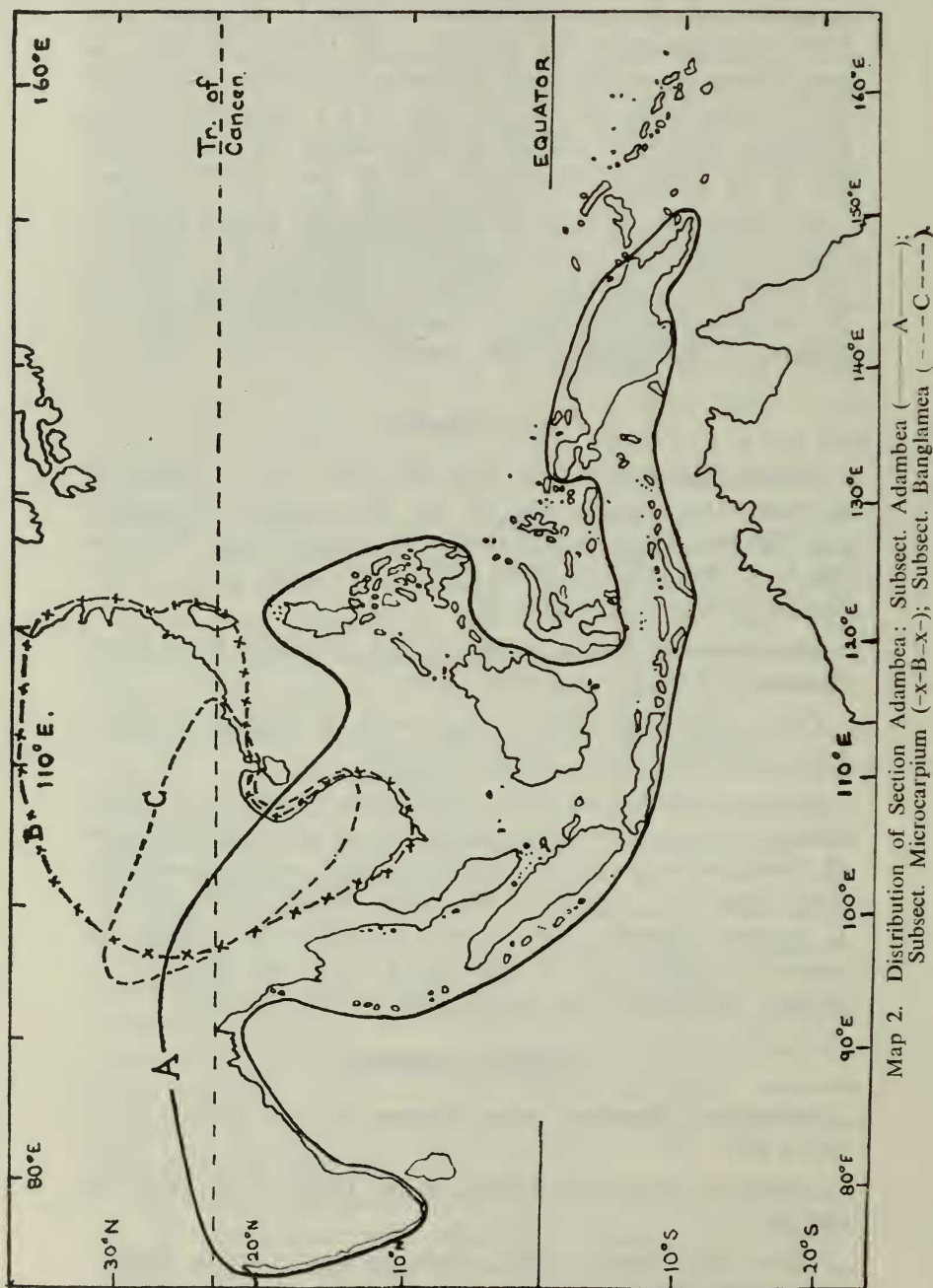
Subsection: **Adambea** sensu Koehne op. cit. (1883) 15 & (1903) 260.

Subsection *Adambeola* Koehne op. cit. (1883) 15 & (1903) 262 **syn. nov.**

Calyx with distinct ridges; sepals glabrous. Capsule large.

DISTRIBUTION: India, Andamans, Malaysia, China, Burma, Thailand, Indochina, Indonesia, Philippines & New Guinea.

TYPE SPECIES: **Adambea glabra** Lam. (= *Lagerstroemia reginae* Roxb.).



Map 2. Distribution of Section Adambea: Subject. Adambea (—A—); Subject. Microcarpum (—x—B—); Subject. Banglamea (---C---).



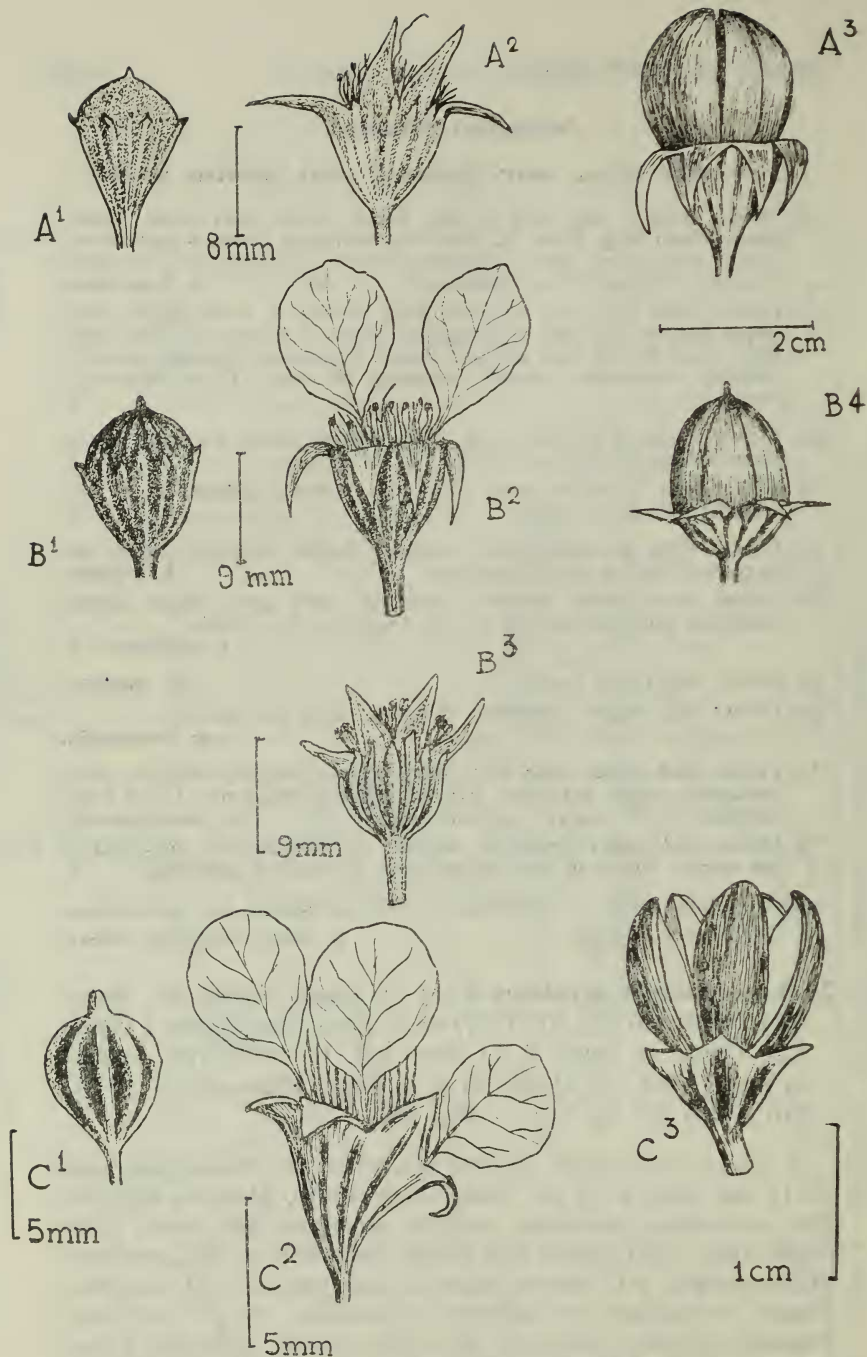
Subsection **Adambea**

(12 or more ridges, ovary glabrous, sepal glabrous within)

- 1a. Flower buds 8 mm long, 6 mm broad. Calyx with acute ridges; sepals 3 mm long. Petals 12 mm long (including claw), 8 mm broad. Leaves dark colour above, glaucous beneath. Fruiting calyx spreading or slightly reflexed. (Fruit elongate 20 x 13 mm) ..... **L. hypoleuca.**
- 1b. Flower buds 8–12 mm or more long, 8 mm or more broad, with ridges flattish, rounded or irregular; sepals 4–6 mm or more long. Petals over 20 mm long and also broad. Leaves not glaucous beneath. Fruiting calyx-lobes reflexed, spreading or erect. (Fruit globose or elongate) ..... 2.
- 2a. Flower buds 10–12 mm long, 8–11 mm in diam. Capsules about 20 mm long, 17–20 mm in diam ..... 3.
- 2b. Flower buds 13–16 mm long, 12–15 mm in diam. Capsules 27–35 mm long, 25–30 mm in diam. .... 5.
- 3a. Flower buds generally ashy coloured. Sepals thickened along the margins. Fruiting calyx spreading ..... **L. reginae.**
- 3b. Flower buds mostly reddish, sometimes ashy grey. Sepals lightly thickened along the margins or not. Fruiting calyx reflexed ..... **L. speciosa — 4.**
- 4a. Flower bud ridges deep ..... **var. speciosa.**
- 4b. Flower bud ridges superficial. (Fruiting calyx not known) ..... **var. intermedia.**
- 5a. Flower bud ridges deep and rough mostly laterally dentate, teeth deciduous or few persistent; ligulate at the sinus or not. Calyx lobes thickened in the margin, in fruit erect. .... **L. costa-draconis.**
- 5b. Flower bud ridges superficial, smooth. Calyx lobes not thickened in the margin. Lobes of the fruiting calyx reflexed or spreading ..... 6.
- 6a. Calyx lobes erect or spreading ..... **L. macrocarpa var. macrocarpa.**
- 6b. Calyx lobes reflexed ..... **L. macrocarpa var. reflexa.**

**24. *Lagerstroemia hypoleuca* Kurz.** in Journ. Asiat. Soc. Beng. XLI (1872) 307, XLVI (1877) 88 & For. Flor. Burma I (1877) 523; Clarke in Hook. f. Fl. Brit. Ind. II (1879) 577; Koehne in Engl. Jahrb. IV (1883) 30 & in Engl., Pflanzenr. 17 = IV. 216 (1903) 262 fig. 56c. — **Fig. 29C.**

A tree  $\pm$  12 m high. *Leaves* lanceolate or oblong-lanceolate, 10–12 cm long, 4–10 cm broad, dark above, glaucous beneath, thin coriaceous, sometimes oblique, acuminate and rarely acute at the apex, sub-rounded and slightly decurrent at base, undulate in the margin, 6–14 nerved on each side; petiole 4–10 mm long. *Panicle* cylindrical or narrowly pyramidal, 10–45 cm long, minutely greyish puberulous all over; pedicel in lateral flower 2–5 mm, the mid-flower sessile. *Flower buds* 10 ridged, turbinate abruptly into 2–4 mm long pedicelliform base, 7–9 mm long, 5–7 mm broad, shortly nipped at the apex. *Calyx* in flower campanulate; tube about 7 mm deep, 7 mm broad; lobes 5, erect, slightly thickened in the margin, 3–4 mm long. *Petals* oblong about 14 mm long (including 5–6 mm long claw), 10 mm broad, undulate in the margin. *Stamens* 4–6 stouter and longer, others many, subequal. *Ovary* subglobose, glabrous. *Fruiting calyx* obconical, tube 8 mm deep, 10–12 mm broad; lobes patent. *Capsule* oblong 13–18 mm long, 11–13 mm in diam., 5-valved.



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Fig. 29. A. *L. speciosa* (L.) Pers. (A<sup>1</sup>-A<sup>2</sup>: Koorders 22,798 $\beta$  in SING. & A<sup>3</sup>: Backer 16,959 in B).

A<sup>1</sup>, Flower bud. A<sup>2</sup>, Flower after anthesis. A<sup>3</sup>, Capsule with calyx lobes reflexed.

B. *L. reginae* Roxb. (B<sup>1</sup>-B<sup>3</sup>: Roxburgh = Wight Cat 1,036 in E — holotype; B<sup>4</sup>: Hort. Miss. 92 in E).

B<sup>1</sup>, Flower bud. B<sup>2</sup>, Fertile flower. B<sup>3</sup>, Flower after anthesis. B<sup>4</sup>, Capsule with patent calyx lobes.

C. *L. hypoleuca* Kurz (C<sup>1</sup>-C<sup>2</sup>: Kurz s.n. in CAL — lectoholotype; C<sup>3</sup>: Kurz s.n. in CAL).

C<sup>1</sup>, Flower bud. C<sup>2</sup>, Fertile flower. C<sup>3</sup>, Capsule with short calyx lobes.

INDIA: **Andamans** (King 329: BM); Mt. Stariet (Osmaston 7: CAL). **South Andamans** (Heinig 31: A; s.n.: SING); Port Blair (Kurz s.n.: CAL — **lectoholotype** (flower) & **lectoparatype** (fruit); Rogers s.n.: E); Bajajag valley (Heinig 8: A). **Great Cocos Island** (Prain s.n.: CAL).

CULTIVATED: Hort. Bot. Calcutta (s.n.: BM & CAL).

25. *Lagerstroemia reginae* Roxb., Pl. Corom. I (1795) 46, t. 65; Willd. Sp. Pl. II (1800) 1178; Pers., Syn. Pl. II (1807) 11; DC. Prodr. III (1828) 93; Roxb., Fl. Ind. II (1832) 505; Wight & Arn., Prodr. I (1838) 308; Wight, Ic. Pl. II (1843) t. 413; Miq. Fl. Ind. I (1855) 623 & Suppl. 1090; Bl., Mus. Lugd. Bat. III (1856) 126, excl. var. *costata* Bl.; Bedd., Fl. Sylv. I (1869) A. 29 (*omnino pro parte*) **stat. nov.** — **Fig. 29B.**

*L. flos-reginae* Retz: all citations *pro parte* under this in the synonymy of *L. speciosa*.

*L. flos-reginae* Retz var. *augusta* Clarke (sphalm. *augusta*) in Hk. f. Brit. India II (1879) 577, **syn. nov.**

*L. macrocarpa* Wall. Cat. (1828) 2114; Voigt. Hort. Suburb. Calc. (1845) 1832: nom. nudum (non *L. macrocarpa* Kurz).

*Adambea glabra* Lam, Encycl., I (1783) 39; Hassk., Cat. Bogor (1844) 256 not *L. glabra* (Koehne) Koehne, 1907.

*L. hirsuta* (Lam.) Willd. Spec. Pl. I (1799); DC., Prodr. III (1828) 93; Koehne in Engl. Jahrb. IV (1883) 31 & Engl. Pflanzenr. 17 = IV. 216 (1903) 263: **syn. nov.**

*Adamboe* Rheede, Hort. Mal. IV (1683) 45 tt. 20 & 21.

*Adambea hirsuta* Lam. Enc. I (1783) 39 p.p.

A tree  $\pm$  10 m high. *Leaves* oblong or elliptic-oblong, 10–23 cm long, 4–8 cm broad, acuminate or acute rarely obtuse at apex, rounded or gradually narrowed toward base, chartaceous, glabrous, 7–15 nerved on each side; petiole 5–10 mm long. *Panicle* greyish or cinereous brown all over, sub-cylindrical, 10–40 cm long, 5–20 cm broad. *Flower bud* often grey, sub-globose or pyriform, 8–14 mm long, 7–10 mm broad, nipped at the apex; base pedicelliform 3–12 mm long. *Calyx* in flower generally cup-shaped, 3–5 mm deep, 6–10 mm in diam.; lobes 6, thickened in the margin, erect or spreading, sometimes reflexed, 12 or more ridged; ridges dorsally sub-rounded often sulcate, longer ones often gradually narrow in the sepals. *Petals* sub-orbicular,  $\pm$  30 mm long (excluding  $\pm$  3 mm long claw),  $\pm$  25 mm broad, gradually narrowed into the claw, undulate in the margin. *Stamens* numerous, subequal. *Ovary* subglobose, glabrous with long slender style. *Fruiting calyx* saucer-shaped,  $\pm$  4 mm deep,  $\pm$  18 mm broad; lobes erect or spreading, thickened along the margin. *Capsule* subglobose, 15–25 mm long, 12–23 mm in diam., woody, 6-valved.

INDIA: **North India**, Dehra Dun (Singh 51: A & UC); Orissa (Mooney s.n.: SING); Patna (Hamilton 1,150<sup>2</sup> = Wall. Cat. 2114-9 partly). **Konkan and Malabar**, loc. incert. (Wight 298: E); Kerala (Subramanian 71,017; Vasavala 36,001 & Subramanian 70,383: BIP); Goa (Rolla 88,133: Kanodia 89,547 & 89,657; Raghavan 103,479: BIP; Fernandes 1,532: A); Courtallum (Wight 1,036: E). **Eastern Coast**, Circars (Roxburgh = Wight Cat. 1,036: E — **holotype**); Tranquebar (Hort. Miss. 92: E); Chalakudi (Meebold 12,489: CAL). **Eastern Bengal & East Pakistan** (Griffith 2,236: A, GH & 433: GH); Manipur (Meebold 7,285: E); Chittagong (Cowan 274, 1,383, 58,114 & s.n.: E; Gamble 7,831: CAL); Agartala (Debbaran 1,053: CAL); Assam (Jenkins 160 & s.n.: E; Griffith 730: BM; Master s.n.: E); Khasis & Jynteah Hills (Ruse 414: A; Gallatly s.n.: SING; Das 34,978: CAL).

BURMA: Pyinmana (Srenander 3,057: E; Sirivarna 61: BKF). Hantawaddy, Okkau (Lace 2,896: E); Rangoon (McClelland s.n.: E — syntype of *L. flos-reginae* var. *augusta*; Smith 26: GH; Parkinson 14,682: A). **Tavoy**, Tenasserim (Keenan, Aung & Rule 1,311: E). Pegu, Irrawaddy & Sittang Valley (Brandis 1,383: CAL); loc. incert. (Kurz s.n.: CAL).

NEW GUINEA: **South N. Guinea**, along the river Digoel (Versteigh BW 4,857: LAE & SING). loc. incert. (leg. ? s.n.: PNH). **Papua** (Brass 6,580: A & 8,160: LAE).

CULTIVATED: **China**, Canton (Hooker s.n.: E). **India**, Calcutta (Wall. Cat. 2114-e: E; Voigt 129: A; Kurz in Madras (Jeffrey s.n.: E & Hunter: E; Elliot 64: E); Napatry in Madras? (Wight = Wall. Cat. 2114-10: E). **Ceylon** (Thwaites 1,554: GH); Allagalla (Worthington 243: BM); Kalugammame (Imsilva 26: BM). **America**, St. Vincents (Smith 925: E & GH). **Jamaica** (Orcutt 2,011: UC). **Martinique** (Hahn 1,439: UC). **Indonesia**, Batavia (Kollmann s.n.: BM).

The specimens from New Guinea give an unusual distribution for this species and may represent a recent invasion or naturalisation of the species in the area. Brass 6,580 was collected on the Daru island where it was rare in 1936, only one mature tree being seen. Versteigh BW. 4,857 was found in 1957, also in South New Guinea along the Digoel river near Wage in the secondary forest, inundated in the rainy season, the lowland being almost continuous from the Daru island.

*L. reginae* Roxb. was described and depicted from specimens of plants growing wild on the mountains of Northern Circars, India, and a progeny of which was growing and flowering in his garden (at Samulcottah?). Since *L. flos-reginae* Retz (1789), which was mainly described from a Javanese plant collected by



Bladh and named earlier as *L. major (Javanensis)* Retz. Obs. I (1779) 20, had also a reference on Koenig's authority "in sylvis Calcuttae" where Calcutta is meant a very large region or province, Roxburgh had to include this name in his synonymy, at least this was the procedure current in his time. However, Roxburgh excluded Javanese specimens by saying that his species was a native of the Circars that flowered in the hot season and seeded in August. Another probable reason for Roxburgh's rejecting Retz's species was that its name was published as a triverbal with "flos reginae" as the specific epithet. This decision was followed by almost all systematists like Willdenow, De Candolle, Blume, Wight and Beddome until Kurz (1877) adopted it as the correct name for the species by changing the *triverbal* into the *biverbal*, a procedure now valid under the 1961 Code.

But as Roxburgh had restricted his name to an Indian species and had moreover given coloured plate of his type and as the type of the species is extant, we think that under Art. 7 Note 4 of 1961 Code, *L. reginae* may be typified on Roxburgh's type and plates and exclude from it Retz's synonym.

In doing so we restrict the name to the portion of the plate that depicts the flowers. Since Roxburgh could not obtain the fruits at the same time as the flowers, it is obvious he obtained a fruit of a species, which is identical with *L. speciosa*.

*L. speciosa* var. *augusta* Clarke is only a larger form of *L. reginae* with a larger calyx and more conspicuous ridges.

*L. hirsuta* (Lam.) Willd. with its basynym *Adambea hirsuta* Lam. is based entirely on Rheed., Hort. Mal. IV (1683) 45 t. 22, Rheede himself states that the tree resembles *L. reginae* as also the flowers and fruits, but in the text the plant is said also to be like a Malvaceous plant drawn and described to have 5 stamens and the leaves and twigs to be lanuginous and hirsute. Obviously a confusion has been made in the text, and there is no *Lagerstroemia* species wild in South India, which has lanuginous and hirsute leaves. A specimen which Rottler tried to identify in the herbarium as Rheede's t. 22 and which was named by Clarke as *L. rottleri* is *L. loudonii* which has no grooved calyx as in *L. reginae* or Rheede's picture and does not occur wild in South India. If we ignore the badly drawn sepals in the figure and ignore Rheede's text, Rheede's fig. 22 is nothing but *L. reginae*. In fact the drawing shows no signs of tomentum on the leaves and twigs. De Candolle (1828) ignoring that the author had described the species with 5 stamens, placed *L. hirsuta* with *L. reginae* among the species that have many subequal stamens. However since *L. hirsuta* is apparently *mixtum compositum* it has not been given a priority right over *L. reginae* Roxb.

26. **Lagerstroemia speciosa** (L.) Pers., Synops. II (1807) 72; Koehne in Engl., Jahrb. IV (1883) 28, in Engl. and Prantl, Pflanzenf. III, 7 (1893) 14 fig. 5P-T & in Engl., Pflanzr. 17 = IV. 216 (1903) 261 figs. 55P-T & 56B; Koord. et Valet., Bijdr. I (1894) 190; Merr. in Journ. Arnold Arb. XXV (1954) 146: *omnino pro parte* — **Fig. 29A.**

*L. flos-reginae* Retz., Obs. V (1789) 25; Kurz, in Journ. Asiat. Soc. Beng. XLVI, 2 (1877) 88 and For. Fl. Burma I (1877) 524; Clarke in Hk. f., Fl. Brit. Ind. II (1879) 577; King, Mat. Fl. Mal. Pen. III (1898) 352; Duthie, Fl. Upper Gang. — Plain I (1903) 353; Gamble, Fl. Madras I (1919) 513; Gagnep. in Fl. Gen. Indoch. II (1921) 941; Haines, Bot. Bihar & Oriss. 3 (1922) 375; Craib, Fl. Siam. Enum. I (1931) 723; Kanjilal et al., Fl. Assam II (1938) 311; Corner in Gard. Bull. Straits Settl. X (1939) 272: *omnino pro parte*.

*Munchausia speciosa* L. in Munchhausen's Der Hausvater V, 1 (1770) 357 t. 2; Murray, Prodr. Stirp. Goll. (1770) Praep; Linn., Mantissa II (1771) 243 pp; Blanco, Fl. Filip. ed. 3, III (1873) 413 t. 314 *pro parte typica*: **basinym.**

*Katou-Adamboe* Rheede, Hort. Mal. IV (1683) 45 t. 22 *pro parte*.

Trees. *Leaves* oblong or elliptic-oblong, glabrous on both sides, acute or obtuse at apex, nearly rounded at base, 5–19.5 cm long, 4–8.5 cm broad, often greyish green above, brown underneath, 10–15 nerved on each side; petioles 4–9 mm long. *Panicle* erect, 15–40 cm long, deciduously ashy or ferruginous pubescent; pedicels upto 1.5 cm in length. *Flower bud* subglobose or pyriform, 7–12 mm long, 6–10 mm in diam. (excluding about 3 mm long pedicelliform base), short nipped at the apex, 12–14 ridged; episepalous ridge almost as long as the alternisepalous ones or abruptly narrowed into a thin ridge in the sepal. *Calyx* campanulate, cinereous or ferruginous pubescent; lobes 6, spreading or reflexed, not or slightly thickened along the margin. *Corolla* petals 6, sub-orbicular, slender clawed, 1.5–3 cm long, 1–2 cm broad. *Stamens* numerous subequal, adnate to the calyx in the upper half of the tube. *Ovary* globose, glabrous or slightly scaly; style filiform, capitate stigma. *Fruiting calyx* glabrous or slightly pubescent, with recurved sepals. *Capsule* ± 22 mm long, ± 22 mm in diam., woody, globose, glabrous, apiculate, usually 6-valved.

BURMA: **Haka** (Dickason 7,811: SING); **Yamethin**, Mintyin (Smales s.n.: A, E); **Pyinma** (leg.? 28: A); Mintyin (Lace s.n.: E); **Zigon** (Ba Pe 9,700: A); **Tharrawaddy** (Smales 42: E); South Pegu (Ba Pe 10,576: A; Kurz 1,974: CAL); **In Sein** (Ba Pe 10,439: A); Rangoon (Dickason 6,805: Parkinson 14,161: A); **Ataran** (Lace 4,776: E & CAL); Mergui (Lace s.n.: E). loc. incert. (Hooker 1,598: GH).

THAILAND: *Northern*: **Tak**, Me Sawt (Kerr 6,158: BM). **Kampeng Pet** (Kerr 5,965: BM: UC; 6,158: UC). *South-Eastern*: **Prachinburi** (Phan 4: BKF 1,211: BKF). **Chantaburi**, Chantaboon (Vesterdal s.n.: SING). *South Western*: **Kanburi**, Wang Yai

(Charoenmayu 413 = BKF 5,472: A, KEP); loc. incert. (Boon-Krong 84 = BKF 26,312: KEP & SING); near Neeckey & Wangka (Bloembergen 8: A, PNH & SING). **Prachubkirikhan**, Bangtaphan (Keith 247: SING). **Peninsula Surat** (Luangsamarn s.n. = BKF 1,213 = BKF 1,216: BKF). **Trang** (Put 264 = BKF 1,214: BKF; Winit s.n. = BKF 1,215 BKF; Boongird 17 = BKF 2,487: A & SING). **Pattani** (Kerr 7,495: BM). loc. incert. (Rabil 379: E).

**INDOCHINA: Vietnam**, Anam, Dalat (Squires 822: A, BM, & SING); Dongai (Pierre 4,996: A & SING); Bang-lang-misc, Chanh-yen (Robert 13: A, BM, E, & UC); Bien Hoa (Vinot s.n.: GH). **Cambodia**, Kg. Cham (Bejiand 220: A).

**MALAYSIA: Kedah**, Kulim (Kuabdulla 89,103: SING); Sik (Ahmad Tajuddin 74,952: SING); Sungai Terap, Selama (Henderson 35,433: A, PNH & SING); Alor Star (Ridley 15,030: SING); Ulu Pantai Mulik (Sow 34,604: SING); Selok Pendiet (Kedah 32,975: SING); loc. incert. (Meh 17,851: KEP); Bandar Baling (Meh 10,081: KEP); Sungai Patani (Meh 10,152: SING); Pondok Tanjong (Mat. Gani 9,764: SING); **Kelantan** (Corner s.n.: SING). **Perak** loc. incert. (Scortechini s.n.: SING; 461: SING); Parit (Parit 9,578: SING); Kuala Kangsar (Dolman 12,073: KEP); Sungei Raya (Burkill & Haniff 13,396: SING); Changkat Terin (Wray 1,873: SING); Kuala Kampar (Haniff 15,578: SING); Batu Gajah (Burkill & Haniff 13,413: SING); Kuala Kangsar, Kola Lama (Haniff 10,350: SING); S. Anson (Haniff 15,941: SING); Pondok Tanjong, Taipeng (Salih 9,764: KEP); Ulu Kenderong Grik (Hamid 11,607: KEP); Kuala Kangsar (Ridley 2,996: SING); Pondok Tanjong (Salleh 9,791: SING); Sungei Siput (Bonar 8,823: KEP); Sungei Krian Estate (Spare 34,489: SING); Grik (Corner s.n.: SING). **Trengganu**, Ulu Brang (Moysey & Kiah 33,870: A & SING); S. Kemamair (Corner s.n.: SING); Kuala Trengganu-Besut Rd. (Sinclair & Kiah 40,740: E & SING). **Pahang**, Kuala Lipis (Nong 4,005 & Lipis 29,386: SING; Henderson 10,760: KEP; Machado 11,583: SING; Marchall 16,972: KEP & SING; Burkill & Haniff 15,786, 15,792 & 16,900: SING); Pekan (Burkill & Haniff 17,109: SING & UC; 17,277: SING); Sungai Mai (Kadim & Mahmood 112: SING); Tembeling (Henderson 24,536: A & SING); Temerloh (Kassim 0715: SING; Md. Said & Idris 6,302: SING; Hamid 4,765, 5,169: SING); Rompin (Mohamud 15,551: E; 17,131: E & SING); Kuala Tahan (Seimund 834, 835, 828, 906: SING); Pekan (Hairlau s.n.: SING); Kuala Tehui (Webber 23,306: KEP); Kuantan (Burn-Murdoch s.n.: SING; Mahamud 3,736: SING; Awang 78,305: SING). **Selangor**, Bangi (Saaf 14,824: KEP & SING; Hamid & Jaamat 10,982: KEP); Ampang (Hamid 9,985: KEP); Kelambu (Hamid 3,296: SING). **Negri Sembilan** between Gemas and Rompin (Burkill 2,123: SING); Durian Tawar state (Tahir 0601: SING); Sungei Lyong (Alvies 1,818 SING); Seremban (Kinsey 1,999: SING); K. Pilol (Dusih 1,917: SING). **Tioman Isl.**, East Coast (Kloss 13,157: BM & SING). **North Borneo**: Kinabatangan (Kadir 16,985: KEP & SING; Arsat 1,155 &



Evangelista 887: SING); Lokan (Ampuria 35,333: SAN & SING); Takala River (Puasa 48,883: KEP & 10,109: SING); Batu Puteh (Ibrahim 3,271: A); Lamag (Ampuria 35,251: SAN); Kaba Tasan (Balajadia 36,384: KEP); Muan region near Sg. Riko (Kostermans 4,381: BM & PNH & SING); Atas Bukit, Masulit, Lahad Datu (Benedick A 3057: SING); Segaliud River (Balajadia 7,097: SING); loc. incert. (Castro & Melegrito 1,712: UC); Tumbang Hiang (Grabowsky 5: BM) Bunguey Isl. (Wood 1,115: A). St. Lucia, Tawau (Kadir A 2,087: KEP & SING). loc. incert. (Villamil 366: A). **Sandakan** Sagaluid, Elopura (Kadir A 2764: PNH & SING & Austin A 1017: PNH, KEP & SING); near road to Sabah Hotel (Madani 56,905: SING, Sinanggul 36,625: SAN); Kudat, Kg. Limbuak Darat, Banggi Island (Ampuria 40,751: SAN); Elopura, loc. incert. (Cuadra A 2220 KEP, PNH & SING); Atas Bukit (Benidick 3,057: KEP); Banguay Island (Wood 1,105: UC); Kudat, Mamang Banggi Island (Ampuria 42,124: SAN). **Sarawak** (For. Dept. Coll. 2,667: A & SING; Brooke s.n.: SING); Kuching (Jais 78: KEP & SING; Haviland s.n.: SING; Sinclair 1,871: SAR & SING; GDSL. 319: SING); Sibu (Clemens 21,112: A & SAR); Santubong (Ashtons 21,478: KEP, SAR & SING).

**INDONESIA:** **Sumatra** (East Coast), Batoe Bahra (Yates 2,128: UC); North Sumatra (Lorzing 11,824: A); Sibolangit (Fairchild & Dorsett 733: UC). **Java**, Rembang (Buesgen 39: B); Tjibunar, Ujung Kulon (Kostermans 71: A, PNH & SING); loc. incert. (Blume s.n.: A & B; Zollinger 607: UC; Forbes 1,286: BM); Bantam, Pulau Peutjang (Sinclair 10,005: E & SING); West Sumbawa (Kostermans 18,645: A); Peutjang, Ujung Kulon (Wirawan 389: SING); Batavia, Swangan (Bakh v/d Brink 5,732: UC); Bodjong Lapang Backer 16,959: B); Tjratip, Triangan (Backer 17,399: SING); Kediri (Kooders 22,687  $\beta$ : B; 22,798  $\beta$ : SING); Kangean, Ardjasa (Backer 26,839: B) Klambangan Penins., Besuki (Jacobs 4,946: SING); Pakalongan (Koorders 27450  $\beta$ : B). **Celebes**, Manado, Gorontalo, Dambalo alt. 25 m (Neth. Ind. For. Serv. bb. 20,017: A & SING).

**PHILIPPINES:** **Luzon**, Cagayan (Bernardo 15,140: E; Velasco 24,864: UC); La Union (Escristor 21,109: A; Lete 164: UC); Principe, Baler (Merill 1,111 GH; & SING); Bataan (Borden 755, 1,283: SING; Williams 188: GH; Ranario 27,770: SING); Mt. Mariveles (Elmer 6,770: E); Pangasinan, Mt. San. Isidro (Finix 29,993: GH); Tarlac (Ahun 701: UC); Tayabas (Vidal 786: A); Pampanga (Bolsta 25: UC); Rizal (Elmer 17,441: A. GH & UC); Laguna (Elmer 8,145: E); Batangas (Ramos 1,882: GH & SING); Albay (Menoza 18,578: SING); Apayao (Fenix 28,156: A). **Mindoro**, Pandurocan (Zaldua 29,851: UC); Sablayan (Gachalian 13,842: PNH); Mt. Mansuy (Conklin 17,519: A & PNH); loc. incert — (Merritt 8,653: SING). **Samar**, Matuguinao (Edano 15,604: PNH); Tagaslian Borongan (Castro 5,822: A &



PNH). **Leyte** (Wenzel 1,224: A, BM & GH); Palo (Elmer 7,095: E). **Culion** (Herre 1,067: A & UC). **Palawan**, Tay Tay (Merrill: Species *Blanocanae* 377: A & GH); Puerto Princesa (Eballo 574: A, PNH & UC); Lipuun, Quezon (Cordero & Espiritu 91,512: KEP & PNH; 91,524: PNH). loc. incert (Canabre 29,968: UC; 29,974: SING & UC). Nigros, Tolong (Abella 13,862: PNH). **Mindanao**, Butuan (Ponce 20,499: GH); Tungao, San Mateo (Mendoza 42,270: PNH); Agusan (Miras, Sabino & Oliveros 24,478: A); Lanao (Cruz 23,891: GH; Guerrero 30,373: UC); Zamboanga del Norte (Frake 38,409, 38,441: A & PNH); Surigao (Wenzel 2,739: A & UC).

**CULTIVATED:** **Thailand**, Bangkok (Kerr 4,400: BM; 6,771 A; BM); Aumphornsatan Palace (Smitinand s.n.: BKF). **Malaya**, Penang, Bot. Gardens (Flippance s.n. & Curtis s.n.: SING); Batu Feringi (Fox s.n.: SING). Selangor, Kepong, Forest Research Institute (Sow & Ariffin 64,967; Lindong 55,779; Ahmad 70,453; Awang 52,094 & 52,082: SING). **North Borneo** (Burbidge s.n.: BM & GH); Sandakan, along the main road to Hospital (Kadir A. 1,813: KEP, PNH & SAN). **Singapore**, Tanglin (Burkill s.n.: SING; Md. Nur s.n.: SING); Old Tamil Lines (Md. Nur s.n.: SING); Bot. Gardens (Furtado s.n., 34,816: SING; Md. Nur s.n., 91, 1,608: SING; Pg. s.n.: SING); Gardens (Flippance s.n.: SING); Grange Road (Haniff s.n.: SING); loc. incert. (Teruya 1,243: SING); Sungei Yu (Hardial & Nor 29: SING). **Australia** Bot. Gardens (White 11,715: A). **Java**, Hort. Bot. Bogor (Leg.? s.n.: B, GH; Beumee s.n.: SING). **Philippines**, Luzon, Laguna (Sulit & Columbres s.n.: A); Mt. Makiling (Sulit 1: A; 8,170: PNH; Lagrimas 479: PNH). **America**, Brazil, Campinas (Pacheco 8,160: UC); Venezuela, Aragua (Pittier 8,829: GH); West Indies, Tobago, Scarborough (Broadway s.n.: E).

*Munchhausia speciosa* was found on specimens collected from a plant grown in the Botanic Garden, Goettingen. The descriptions, both generic and specific, and a plate were made by Linnaeus. Muenchhausen, in printing the descriptions and the plate in Muenchhausen der Hausvater V (1770) 357 t. 2, recorded Linnaeus as the author and stated that the latter had seen only dried specimens. The Javanese vernacular name *boengoer* was included in the specific description and its habitat was indicated to be Java and China. These descriptions without the plate were reprinted by Murray, Prodr. Stirp. Gotting. (1770) Praef.

However in 1771 Linnaeus (Mantissa II p. 243) credited the species to China only and noted it as a shrub (*arbuscula*), and this despite the fact that in the two above quoted descriptions it was described as a tree (*arbor*) that its Javanese vernacular name was mentioned and that Muenchhausen (l.c.) had indicated in the remarks that the plant, being of hot regions, had difficulties in acclimatizing itself in a wintry climate of Europe.

Merrill (Journ. Arn. Arb. XXXV, 1954 p. 147), after examining the types of *Munchhausia* in the Linnean herbarium, noted that two out of three sheets in *Munchhausia* cover represented *M. speciosa* L., that either of these sheets could have been used in drawing the plate given in the protolog, and that one of these two sheets bears the name *boengoer* in Linnaeus' own hand-writing. He does not mention anything about the third species and may represent a Chinese plant.

This means that both the generic and specific descriptions were based on the specimens of a plant from Java and so also the plate. It is not permissible to exclude the main characters from a protolog if there are specimens to vouch for their accuracy, even when the third syntype represent different species.

Apparently because Linnaeus had changed the description in 1771 from "arbor" to "arbuscula" or for some other reason De Candolle (Prodr. III, 1828 p. 93) identified the Linnean species with *L. indica* which is a shrub and has an almost smooth calyx, overlooking the fact that Linnaeus had described *M. speciosa* as having "calyces ..... torulis sex canaliculatis" and depicted a plant having 12 ridges. De Candolle's misinterpretation of the species has contributed to obscure its status and has led many to reject the name as ambiguous, despite Koehne's note showing De Candolle's confusion on the matter (Koehne in Engl. Bot. Jahr. LV, 1883 p. 28 footnote and p. 19 in synonyms of *L. indica*).

Hence following Koehne (1883 and 1903) *L. flos-reginae* Retz is reduced here to *L. speciosa*.

It may be noted that this species is known to flower when quite young even in pots.

26a. ***Lagerstroemia speciosa* var. *intermedia* (Koehne) Furtado et Montien comb. nov. — Fig. 30B.**

*L. intermedia* Koehne in Engl. Pflanzenr. 17 = IV. 216 (1903) 260 fig. 56 A; Gagnep. in Fl. Indoch. II (1921) 962: **basinym.**

This differs from the other varieties of the species in having smallest flower buds, about 9 mm long, 8 mm in diam. Fruiting specimens not seen.

CHINA: Yunnan Prov; Szemao, Western mountains, alt. 1,300 m (Henry 11,912: E — **isolectotype**); Lan-Tsang Hsien (Wang 76,665: A).

BURMA: Myitkyina distr., Dahwinchaung, alt. 280 m (Rogers 217: E); Pyinma, alt. 100–150 m (Po Kyaw 23: E); Yunnan frontier, Takaw alt. 650 m (Kingdon-Ward 12,761: BM).

The calyx bears a conspicuous ligule at the sinus and may be only a mountain form of var. *ligulata*. Only specimens in flowering stages are known, which have somewhat small leaves.

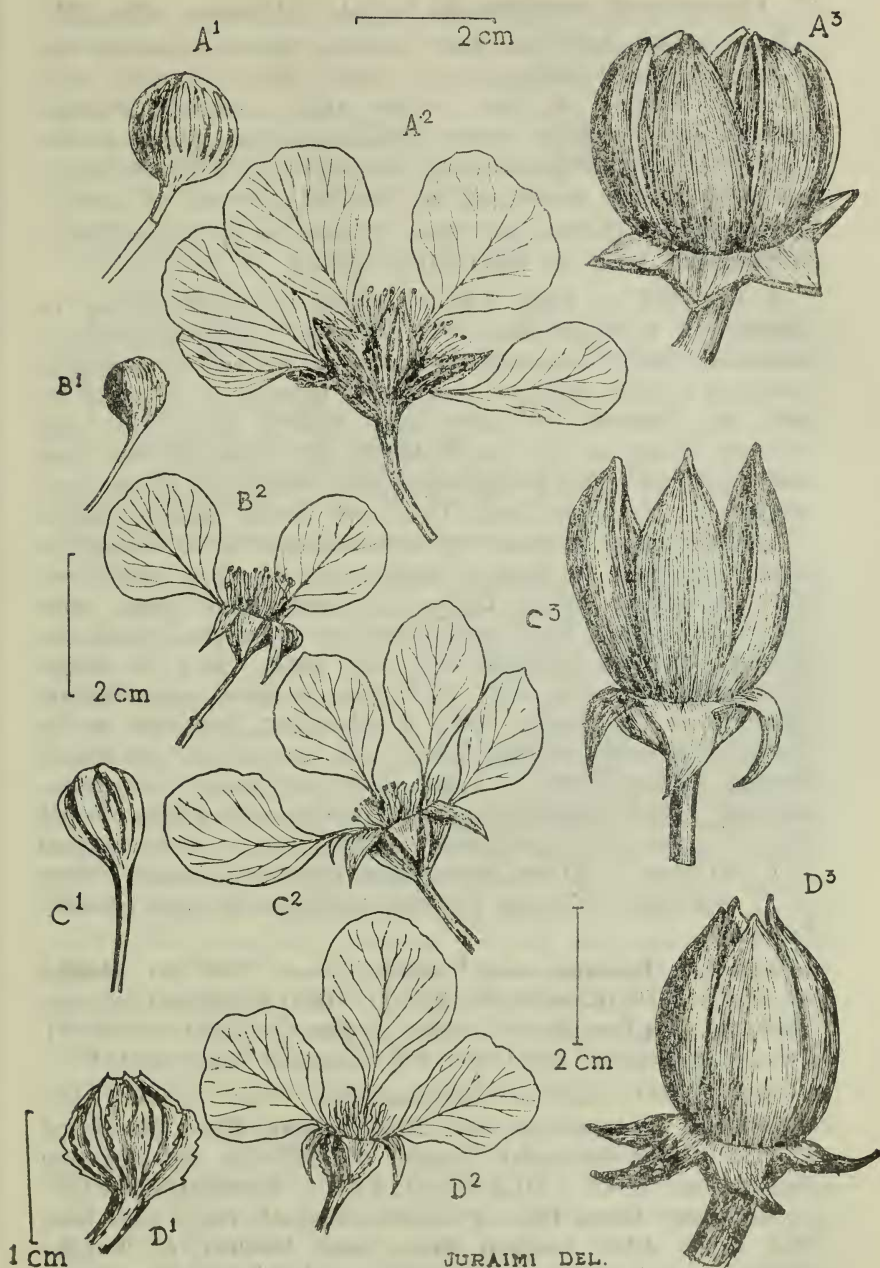


Fig. 30. A. *L. macrocarpa* Kurz var. *macrocarpa* (A<sup>1</sup>-A<sup>2</sup>: Kurz 1,972 in CAL — lectotype; A<sup>3</sup>. Rock 9,665 in A).

A<sup>1</sup>, Flower bud. A<sup>2</sup>, Fertile flower. A<sup>3</sup>, Mature capsule.

B. *L. speciosa* (L) Pers. var. *intermedia* (B<sup>1</sup>-B<sup>2</sup>: Henry 11,912 in E — isolectotype). B<sup>1</sup>, Flower bud. B<sup>2</sup>, Flower.

C. *L. macrocarpa* Kurz var. *reflexa* (C<sup>1</sup>-C<sup>2</sup>: Chaweng 9,872: BKF). C<sup>1</sup>, Flower bud. C<sup>2</sup>, Flower. C<sup>3</sup>, Mature fruit.

D. *L. costa-draconis* (D<sup>1</sup>-D<sup>3</sup>: Kosterman 1,131: SING). D<sup>1</sup>, Flower bud. D<sup>2</sup>, Flower. D<sup>3</sup>, Mature fruit.



27. **Lagerstroemia costa-draconis** Furtado et Montien — **Fig. 30D.**

Inter species *Adambeae* cum fructibus maximis ponenda sed alabastro juvenili sulcato, dorso basin versus vel secus sulci margines dentato vel inter sulcos costis minoribus deciduis dentatis sitis, dentibus saepe deciduis, calycis costis asperis gracilibus dorso plerumque acutis, interdum prope ejustem sinum conspicue ligulati, sepalis calycis fructiferi porrectis vel patulis.

**Holotypus:** THAILAND: Prov. Srisaket prope Khantharohm (Suvanakoses 1,592 = BKF 26,441: SING).

A tree 5–8 m high. *Leaves* oblong or elliptic-oblong or oblanceolate 6–40 cm long, 5–14 cm broad, obtuse or acute or sometimes shortly acuminate at the apex, rounded or gradually narrowed at base, glabrous, much paler beneath, 7–14 nerved on each side; petiole 7–15 mm long. *Panicle* 10–30 cm long, 5–20 cm broad; at first greyish-brown puberulous all over then nearly glabrous with a few flowered, short branchlets. *Flower buds* subglobose, 11–13 mm long, 11–13 mm broad, sulcate forming 12 or more ridges, ridges more or less dentate in the margins or dentate growth in the furrows, margins and growth in the furrows often deciduous; ridges finally thin and often acute; apex star-shaped with 6 short forms from the tip of the lobe to the summit; base pedicelliform 6–9 mm long. *Calyx* in flower cup-shaped, 8–12 mm deep, 10–13 mm in diam., often ligulate below or at the sinuses; lobes 6, triangular, thickened in the margin. *Petals* sub-orbicular 3.5–6.0 mm long, 3.0–4.5 cm broad, abruptly narrowed into  $\pm$  5 mm long claw. *Stamens* numerous, subequal. *Ovary* subglobose or short oblong with a long slender style. *Fruiting calyx* thickened, woody, cup or saucer-shaped  $\pm$  6 mm deep,  $\pm$  20 mm broad, lobes spreading. *Capsule* oblong  $\pm$  35 mm long,  $\pm$  25 mm in diam., nipped at the apex, usually 6-valved.

BURMA: **Taungoo**, near Kyaukkyi (Lace 5,396: E). **Mendat** alt. 3,000'–3,750' (Kingdon-Ward 22,177: BM). **Rangoon** (Dickason 5,049: A). **Tha Byn** (Ba Pe 10,445: A). **Kan Gyi** (Ba Pe 9,673: A). **Pegu**, Yoma (Kurz 1,345: CAL); Mt. Victoria (Cooper 6,074: E).

THAILAND: *Eastern:* **Chiyapum Prov.** (Kerr 19,967: BM). **Ubol Prov.** (Lakshnakara 881: BM). **Srisaket Prov.** (Smitinand 12,158: SING); Kantralak (Prayad 272: SING); Khantharohm (Suvanakoses 1,592 = BKF 26,441: KEP — **isoholotype** & SING — **holotype**). **Korat Prov.** (Nakornrachasima), Ban Chum Seng (Put 2,540: BM). **Kanburi Prov.**, near Neeckey & Wangka (Bloembergen & Kostermans 295: A); near Kin Sayok (Kostermans 1,131: SING).

CAMBODIA: Strung-Streng (Leg? 2,161: GH).

This species of *Adambea* section has very large capsules and may be placed among the *L. macrocarpa* group, but is distinguished by its young flower buds being often dorsally dentate at base or along the margins of the furrows and also bearing frequently short dentate deciduous ridges in the furrows. Most of the teeth and the marginal growths fall off making the flower



buds and calyces later rough, thinly ridged. Sometimes the calyx bears a conspicuous ligule at or below the sinus. The calyx lobes are thickened in the margin and are patent or spreading in the mature capsule.

28. *Lagerstroemia macrocarpa* Kurz in Journ. Asiat. Soc. Beng. XLII, 2 (1873) 234, XLVI, 2 (1877) 88, & For. Fl. Burma I (1877) 524; King in Mat. Fl. Mal. Pen. III (1898) 353 sub obs.; Brandis, Ind. Trees (1911) 339; Craib in Kew Bull. (1911) 53; Gagnep. in Fl. Indoch. II (1921) 942; Ridl., Fl. Mal. Pen. I (1922) 824 pp.; Craib, Fl. Siam. Enum. I (1931) 725.

*L. hossei* Koehne in Engl. Jahrb. XLII Beibl. 97 (1908) 50; Craib in Kew Bull. (1911) 53; Gagnep. in Fl. Indoch. II (1921) 960.

*L. intermedia* Koehne var. *oblonga* Craib in Kew Bull. (1911) 53; Gagnep. in op. cit. (1921) 962.

*L. speciosa* sensu Koehne in Engl. Jahrb. IV (1883) 28 et. Engl. Pflanzenr. 17 = IV. 216 (1903) 261 pp.

28a. *Lagerstroemia macrocarpa* var. *macrocarpa* — Fig. 30A.

A tree  $\pm$  8 mm high. *Leaves* oblong or ovate-oblong, 10–47 cm long, 5–20 cm broad, acute at the apex when young later sub-rounded, obtuse or gradually narrowed at base, chartaceous, glabrous 8–12 nerved on each side; petiole 5–18 mm long. *Panicle* greyish brown velvety all over, sub-cylindrical 10–30 cm long. *Flower buds* sub-globose 10–13 mm long, 9–12 mm broad, obscurely nipped or not, pedicelliform base 8–12 mm long. *Calyx* in flower generally cup-shaped, tube 6–10 mm deep, 8–12 mm in diam.; lobes 6, erect or spreading, 8–12 mm long; ridges sulcate with broad, somewhat flattened spaces or ridges between, the shorter and bigger often marked with a furrow amidst. *Petals* short-oblong, orbicular and abruptly narrowed into the claw, 20–45 mm long (including 4–8 mm long claw), 15–40 mm broad, undulate in the margin. *Stamens* numerous, subequal. *Ovary* subglobose with a long slender style. *Fruiting calyx* thickened, woody, saucer-shaped, 3–5 mm deep, 25–30 mm broad; lobes spreading. *Capsule* 25–40 mm long, 20–35 mm in diam., short oblong or subglobose, thickened; woody, usually 6-valved.

BURMA: **Upper Burma**, loc. incert. (leg. s.n.: A). **Maymyo** (Lace 5,803: E). **Pyinma** (Din s.n.: E). **Southern Shan State**, Taungyi (Abdul Khalil s.n. = CAL 177, 101: CAL). **Tha-byn** (Ba Pe 10,445: A). **Kan Gui** (Ba Pe 9,665: A). **Myingyan** (Lace s.n.: E). **Henzada**, Migon (Lace s.n.: E). **Pegu** (Kurz 1,972: CAL — **lectotype**); Littang side (Kurz 1,972: CAL — **syntypes**); Yoma (Kurz 1,345: CAL — **syntypes**); Tonkyeghat, F. Pagoda (Kurz 1,345 & 1,347: CAL — **syntypes**). **Martaban** (Kurz 1,345: CAL — **syntypes**). Tharrawaddy, Tyinmyok (Smales 41: E).

THAILAND: **Northern: Chiangmai**, Me Ping (Kerr 5,634: BM); loc. incert. (Kerr 578: BM — **holotype** of *L. intermedia* var. *oblonga*); Chiangmai to Chieng Rai, Wieng Papao (Rock 1,665: A).

INDOCHINA: **Laos** (Talbot de Malahide 1: SING).

28b. *Lagerstroemia macrocarpa* var. *reflexa* Furtado et Montien  
— Fig. 30C.

A var. *macrocarpa* sepalis calycis fructiferi valde reflexis differt.

**Holotypus:** THAILAND: Prae (Bhusayallanit 18,079: BKF).

This variety differs from the type form in having sepals of the fruiting calyx reflexed.

BURMA: **Haka** (Dickason 7,592: SING). **Maymyo Plateau** (Lace s.n.: E; 5,520: E). **Shan States**, Keng Tung (MacGregor 668: E); Taungyi (Abdul Khalil s.n.: E). **Henzada** (Lace s.n.: E). **Rangoon**, Mt. Popa (Dickason 5,460: A). loc. incert. (Prazer 19: E).

THAILAND: Northern: **Chiengmai**, Chiengdao (Khantchai 12,706: BKF & KEP). **Lumpang** (Krajang 9,826: BKF; Stan 9,854: BKF; Chaweng 9,872: BKF; Sukrit 11,270: BKF; Vithun 11,294: BKF). **Prae** (Bhusayallanit 18,079: BKF — **holotype**); East Mae-Yom Forest (Thai For. Dept. Coll. 2,510: A). **Muang Lom** (Kerr 5,734: UC). **Bitsanulok** (Groff 6,065: UC). **Nakawn Sawan** (Kerr 5,975: CAL). **North Eastern: Loie**, Wang Sphung (Khantchai 12,474: BKF & KEP). **Khonkaen** (Din 5,644: SING).

INDOCHINA: **Laos**, Vientiane (Addis 1: SING).

CULTIVATED: **Bangkok** (William s.n.: SING).

Often many calyces are diseased even in the buds in which case the calyx ridges may wholly disappear and both the calyx and fruit remain small. Some such calyces have reflexed sepals and others erect, and it is possible that such forms might be confused with *L. speciosa* or *L. reginae*. However a large whitish pouch-like mark at the sinus, suggests that the specimens have to be referred to *L. macrocarpa* var. *reflexa*.

Subsect. **Microcarpidium**

Subsection **Microcarpidium** Furtado et Montien.

Sect. *Velaga* sec. Koehne op. cit. (1883) 15 & (1903) 257. quoad *L. subcostata*.

*Alabastra globosa* vel subglobosa, circa 2–4 mm (sine basi) in diam., costis superficialibus; sepala intus glabra saepe appendice apicali penicillata. Capsula minora fere globosa, majora ellipsoidea, 4–8 mm longa. Folia 1.5–5 cm longa, interdum subduplo longiora, 2–5 cm lata.

DISTRIBUTION: China, Japan, Indonesia, Formosa and Philippines.

TYPUS: *L. subcostata* Koehne.

This subsection is unique in having very small, globose or subglobose flower buds, 2–4 mm in diam., with 12 or more superficial ridges; small carpels, globose ones about 4 mm long. and ellipsoid ones about 6–8 mm long, 3–4 mm wide. Leaves usually small.

Excepting in *L. micrantha*, the calyx in the other species of this subsection has an annular band within, on which petals are seated and in this respect, these species resemble *L. indica*, a larger flowered species and belonging to the section *Sibia*.

### Key to the Species

- 1a. Calyx distinctly auriculate at the sinus ..... *L. limii*.
- 1b. Calyx without auricles ..... 2.
- 2a. Calyx without an annular band within ..... *L. micrantha*.
- 2b. Calyx annulate within ..... 3.
- 3a. Petal linear or elliptic, narrow ..... *L. glabra*.
- 3b. Petal nearly as broad as long, ovate or cordate ..... 4.
- 4a. Petal deltoid-oblong, truncate or slightly cordulate towards the base, slightly undulate. Capsule dark when mature, subglobose ..... *L. yangii*.
- 4b. Petal as long as broad, often crispate in the margin and cordulate. Capsule oblong or ellipsoid ..... *L. subcostata*.

29. *Lagerstroemia limii* Merr. in Philipp. Journ. Sc. XXVII (1925) 165. — **Fig. 31a, 31b.**

*L. chekiangensis* Cheng in Contrib. Biol. Lab. Sc. Soc. China (1932) 73 fig. 2: **syn. nov.**

A shrub or small tree. *Leaves* elliptic or oblong-elliptic, thin coriaceous, 6–9 cm long, 2.5–4 cm broad, minutely pubescent above, densely pubescent on the midrib and reticulation beneath, acute or shortly acuminate at the apex, gradually cuneate or sometimes sub-rounded at base, 9–12 nerved on each side; petiole pubescent 2–4 mm long. *Panicle* terminal, pyramidal, 8–15 cm long, pubescent all over. *Flower bud* subglobose about 4 mm long (excluding  $\pm$  2 mm long pedicelliform base), 4 mm broad, pubescent, broadly auriculate at the sinus, 12–14 ridged, nipped at the apex. *Calyx* in flower cup-shaped, 3–4 mm deep, 4 mm broad; lobes usually 6, triangular 3–3.5 mm long; appendages persistent at each sinus, about 2 mm long, 3 mm broad. *Petals* ovate or sub-orbicular 4–5 mm long (not including  $\pm$  5 mm long claw), 4–5 mm broad, undulate in the margin. *Stamens* many, 5–7 longer and thicker, the others subequal. *Ovary* globose, glabrous with a long slender style. *Fruiting calyx* obconical, slightly pubescent, 2 mm deep, 6 mm broad with  $\pm$  2 mm long base; lobes 6 erect, often pubescent along the ridge and the rim. *Capsule*  $\pm$  10 mm long, 6–7 mm in diam., oblong or elliptic-oblong, glabrous, 4–6 valved.

CHINA: **Szechuan & Hepeh** (Hwa 33: UC). **Chekiang**, Tatze Chiao (Mayer 1,512 & 1,513: A); Han-Chow (Mayer 431: UC). **Fukien**, Amoy (Chung 801: UC; 1,644: A, E & SING — **isoholotypes**, UC — **holotype** & 1,682: UC; 1,770: A & UC; 4,656, 4,790, 4,882, 4,951, 5,093 & 6,096: A; & s.n.: BM & SING). Hinghwa (Lin Pi 6,286: UC; Fung Hom 19,180: A; Dunn 2,729: A).

*L. chekiangensis* is only a more vigorous and hairy form of *L. limii*. Apparently younger side shoots of *L. limii* produce obovate leaves, and glabrous leaves and calyx, the last with very short auricles (cf. Dunn 2,729, Chung 6,096 & Fung Hom 19,180 from Amoy).

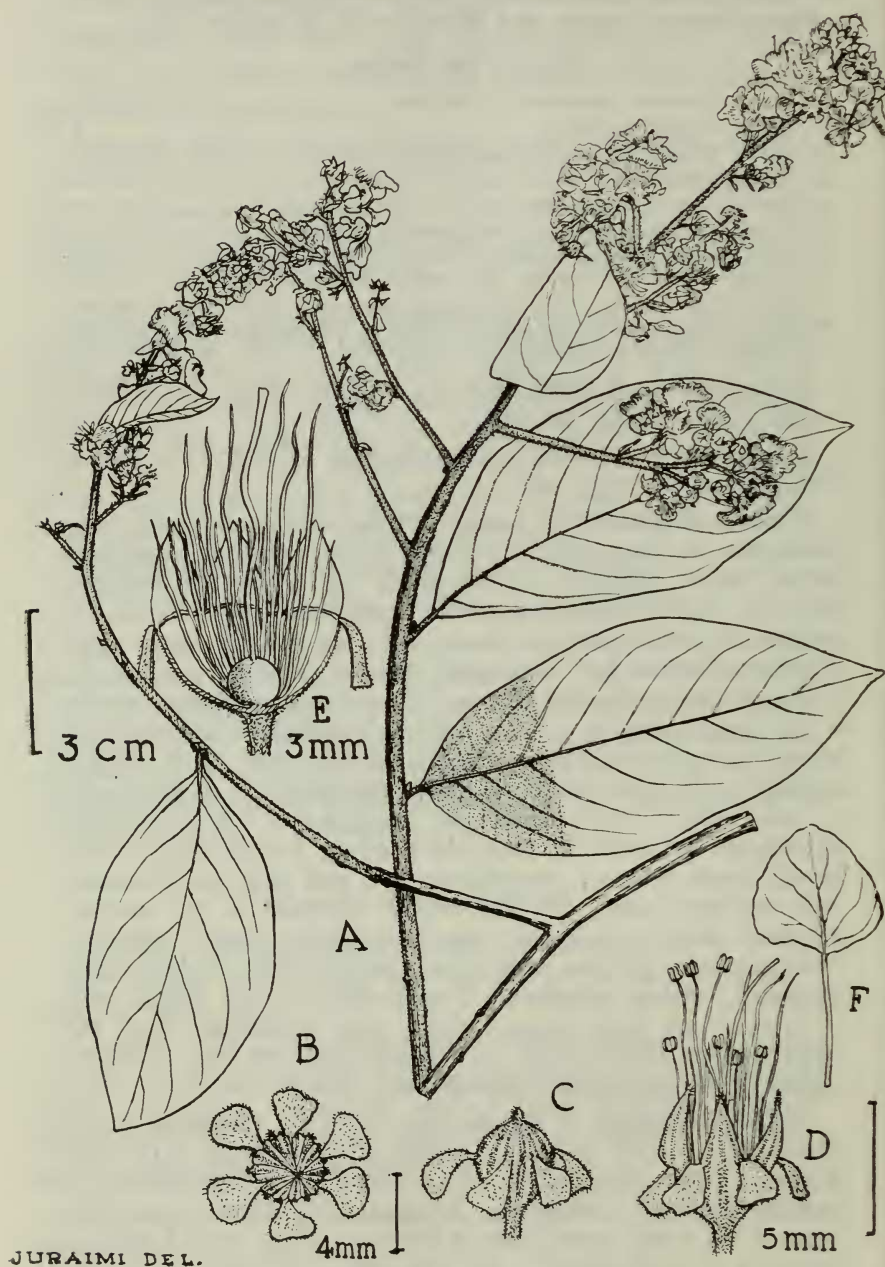
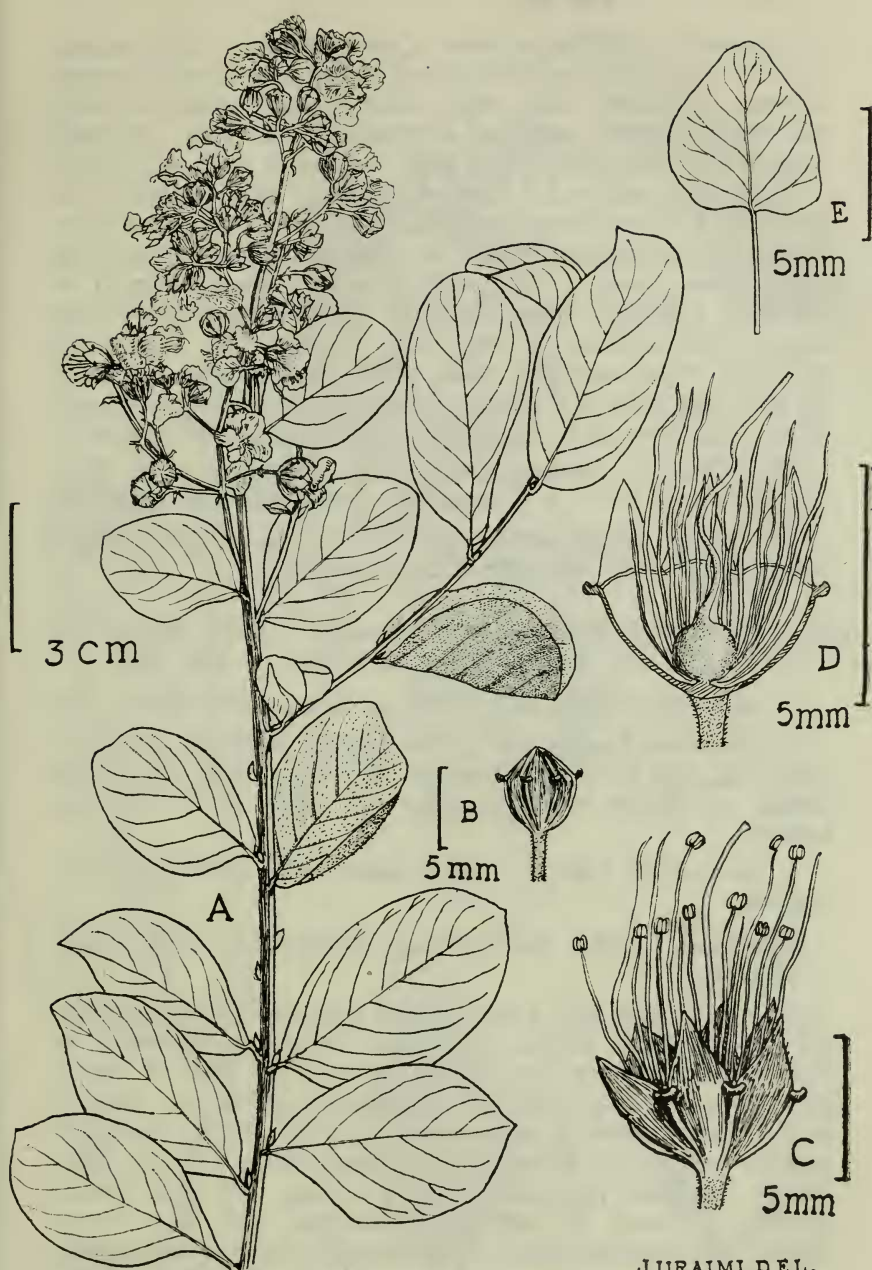


Fig. 31a. *L. limii* Merr. (A-F: Chung 1,644 in SING — isoholotype).

A, Fertile twig. B-C, Flower bud with appendages. D, Flower after anthesis. E, Longitudinal section of flower. F, Petal.





JURAIMI DEL.

Fig. 31b. *L. limii* Merr. (A form with almost glabrous calyx, shorter calyx, auricles and obovate leaves). Chung s.n. in SING.

A, Fertile twig. B, Flower bud. C, Flower after anthesis. D, Longitudinal section of flower. E, Petal.

30. **Lagerstroemia micrantha** Merr. in Journ. Arn. Arb. XXI (1940) 379. — **Fig. 32.**

Apparently small tree or shrub. *Leaves* elliptic or short oblong, 5–8 cm long, 3.0–4.5 mm broad, dark brown above, paler beneath, minutely pubescent when young, later sparsely pubescent along the midrib beneath, acute or acuminate at the apex, gradually narrowed or sub-rounded and often unequal at base, 4–6 nerved on each side; petiole 2–3 mm long. *Panicle* subpyramidal, 7–12 mm long, 4–12 mm broad, terminal, brownish pubescent all over. *Flower bud* subglobose about 3 mm long (including 1.5 mm long pedicelliform base), 1.5–2.0 mm in diam., shortly nipped at the apex, 12 faintly ridged. *Calyx* in flower campanulate, 2 mm deep, 2 mm in diam.; 6 lobes, erect, 1.5 mm long, deciduously pubescent. *Petal* undulate, ovate, about 1.8 mm long (including 0.8 mm long claw), 0.8–1.0 mm broad. *Stamens* many, subequal. *Ovary* subglobose, glabrous; style 3–5 mm long. *Capsule* (not seen).

INDOCHINA: **Annam**, Quang Binh Prov., at Kim Bang Village (Petelot 3,743: A — **holotype**). **Formosa** (Faurie 8,076: A).

The species has unusually small flowers and shortly clawed petals. It is a very close ally of *L. subcostata*.

31. **Lagerstroemia glabra** (Koehne) Koehne in Engl., Jahrb. XLI (1907) 102, non. *L. glabra* Gagnep (1918). — **Fig. 33.**

*L. microcarpa* Wight *sec.* Hance in Journ. XVI (1879) 107.

*L. subcostata* Koehne var. *glabra* Koehne in Engl., Jahrb. IV (1883) 20, and in Engl., Pflanzenr. 17 = IV. 216 (1903) 260; Rehder et Wilson in Journ. Arn. Arb. VIII (1927) 179 p.p. **basinym.**

*L. stenopetala* Chun in Sunnyatsenia VII (1943) 8 pl. 2. **syn. nov.**

**Holotypus:** CHINA, Sai Shi Chan (Sampson in Herb. Hance n. 15,619).

A shrub or small tree. *Leaves* elliptic lanceolate or ovate-elliptic, 5.0–11.5 cm long, 2.5–4.0 cm broad, chartaceous, glabrous on both sides, sometimes with a few hairs at the axils of lateral nerves beneath, long acuminate sometimes acute or sub-rounded at the apex, cuneate to sub-rounded at base, slightly decurrent into the petiole, 5–7 nerved on each side; petiole 2–7 mm long. *Panicle* terminal, pyramidal, 5–12 cm long, 2–8 mm broad, sparsely pubescent or glabrous, rectangular with short acute angles, often bearing linear bracteoles. *Flower bud* top-shaped with abruptly narrowed into 1–2 mm long pedicelliform base, obscurely 12–14 ridged, shortly nipped. *Calyx* in flower funnel-shaped, 3–4 mm deep, 3 mm broad; lobes 6, erect or spreading, about 1.5 mm long. *Petals* oblong or elliptic about 3 mm long (excluding 2–3 mm long claw), 3 mm broad, undulate in the margin. *Stamens* many, 3–6 thicker and longer, the others subequal. *Ovary* subglobose, glabrous with a long slender style. *Capsule* ellipsoid, 6–8 mm long, 4–5 mm in diam.

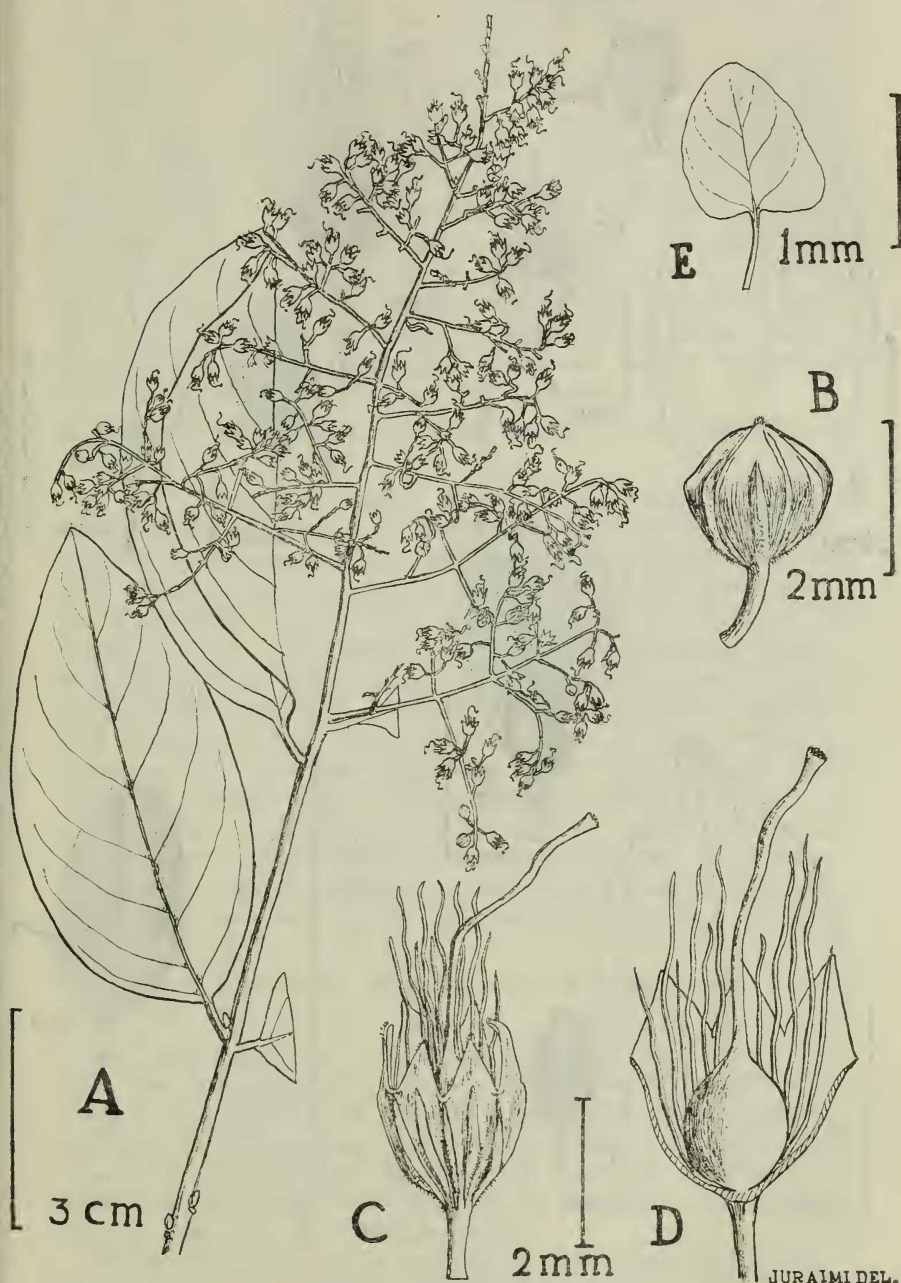
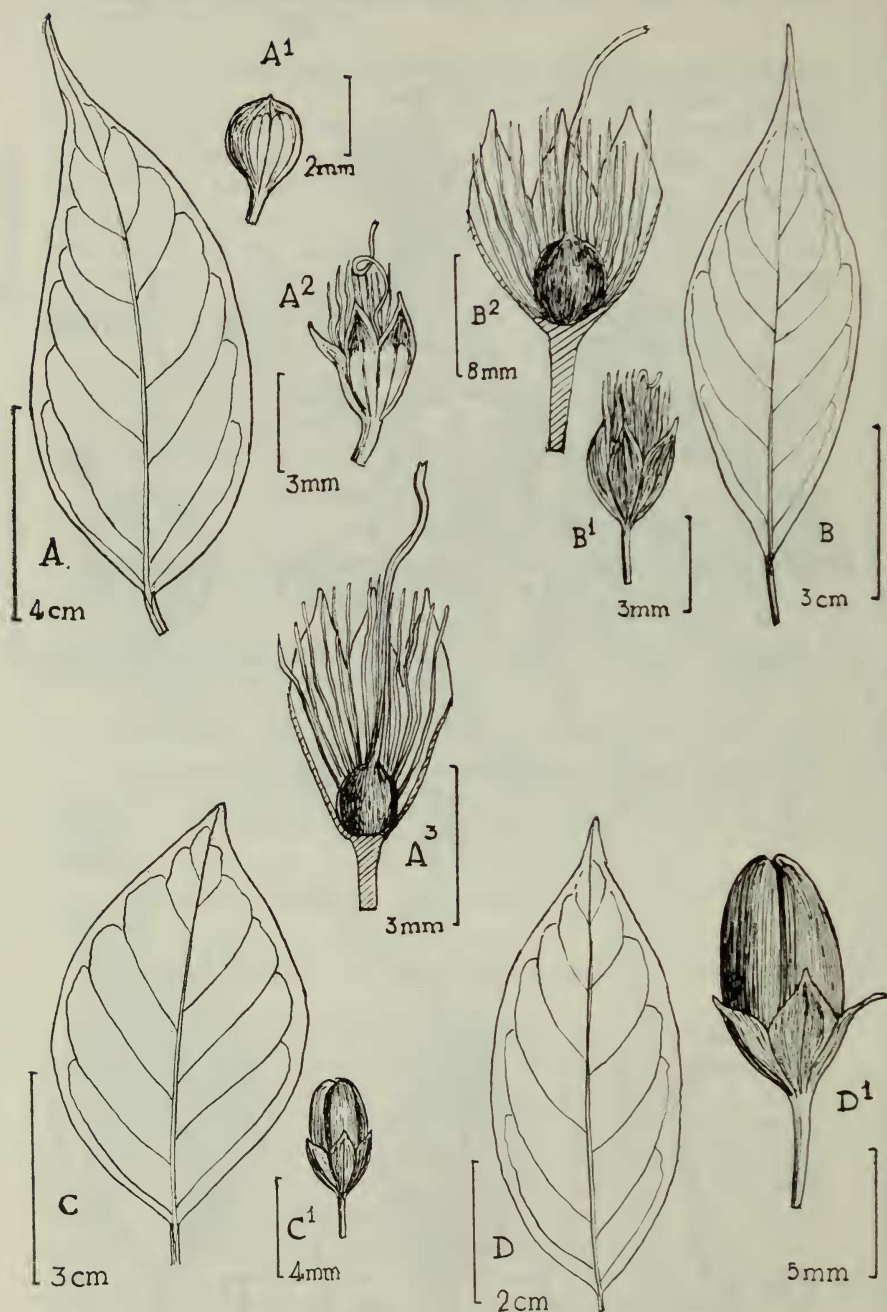


Fig. 32. *L. micrantha* Merr. (A-E: Petelot 3,743 in A — holotype).

A, Fertile twig. B, Flower bud. C, Flower after anthesis. D, Longitudinal section of flower. E, Petal.



*Guraimi del. 67.*

Fig. 33. *L. glabra* Koehne (A–A<sup>3</sup>. Tsang 20,543 in SING — isoholotype of *L. stenopetala*; B–B<sup>2</sup> Chow 536 in A; C–C<sup>1</sup> Henry 7,169 in A. D–D<sup>2</sup> Tsang 23,000 in A).

A, B, C, D, Leaves. A<sup>1</sup>, Flower bud. A<sup>2</sup>, B<sup>1</sup>, Flower after anthesis. A<sup>3</sup>, B<sup>2</sup>, Longitudinal section of flower. C<sup>1</sup>, D<sup>1</sup>, Capsules.



CHINA: Kwangsi, Pa Yam Shan on Kwangtung border (Tsang 23,000: A); Hupeh (Henry 7,169: A, BM, E & GH); Patung Hsien (Chow 536: A & E). Kwangtung, Fan Shiu Shan (Lau 2,593: A); Sam Koh Shan (Tsang 20,543: A, E, SING & UC — isoholotypes of *L. stenopetala*).

JAPAN: Lui Kiu Islands (Yokohama Nursery — s.n.: A).

There is a great deal of variation in the specimens referable to this species and without having the holotype to consult we are not able to separate them into varieties. Henry 7,169 from Hupeh, China, represents a broader leafed form as was noted by Koehne (1903) himself, and his *L. fauriei* may also be a form or variety referable here. *L. stenopetala* has ovate slightly curved leaves with a long acuminate or caudate acuminate apex. Chow 536 from Hupeh has elliptic acuminate or caudate-acuminate leaves. Tsang 23,000 has subsessile leaves and may be the typical form as described by Koehne (1907 p. 104).

32. *Lagerstroemia yangii* Chun in Sunyats. VII (1948) 7. — Fig. 34.

A tree, branches pubescent, brown. *Leaves* obliquely elliptic, widest above the base, 7–10 cm long, 3–4 cm broad, narrowed at base, acuminate at apex, undulate in the margin, hairy on both surfaces when young, later glabrous and dark above, paler and glabrescent beneath, hairs persistent along the nerves, 7–9 nerved on each side; petiole 2–4 mm long, puberulous. *Panicle* terminal, 6–7 mm long or longer with lateral long branches borne in leaf axils; branchlets angled, brownish, pubescent, congested with flowers. *Flower buds* about 2 mm in diam., globose, superficially 12 costulate, puberulous. *Calyx* tubular, 2 mm deep with lobes slightly shorter, hairy, glabrous within, except at the appendicular tips. *Petals* ovoid, undulate in margin, obtuse at apex, roundedly cordulate at base, slightly decurrent in the claw. *Stamens* unequal, 6 longer, all inserted at the base of the calyx tube. *Ovary* glabrous. *Capsule* subglobose 5–7 mm long, 5–6 mm in diam., black.

CHINA: Kwangtung Prov. by the Lunchow river (Ford 1,719: A).

We have interpreted this species from the description only. The type was collected by Lieut. Yang Ching Hseng from an old dying tree about 25 m. tall with a trunk of one metre in diam., growing near a monastery in Kweichow Province of China. The capsule in the holotype was obviously not fully developed, a reason why the seeds were described as not being fully mature. The capsules in Ford 1,719 are larger.

The species appear to be very like *L. subcostata* though easily distinguished by its black, subglobose capsules.

var. **ambigua** (Pamp.) Furtado et Montien. — Fig. 35b (b).

*L. subcostata* Koehne var. *ambigua* Pampini in Nueva Gorn. Bot. Ital. XVII (1910) 676: **basinym**.

Differs from the type variety in the leaves being much narrower, fewer nerved (3–5 nerved), more hairy.

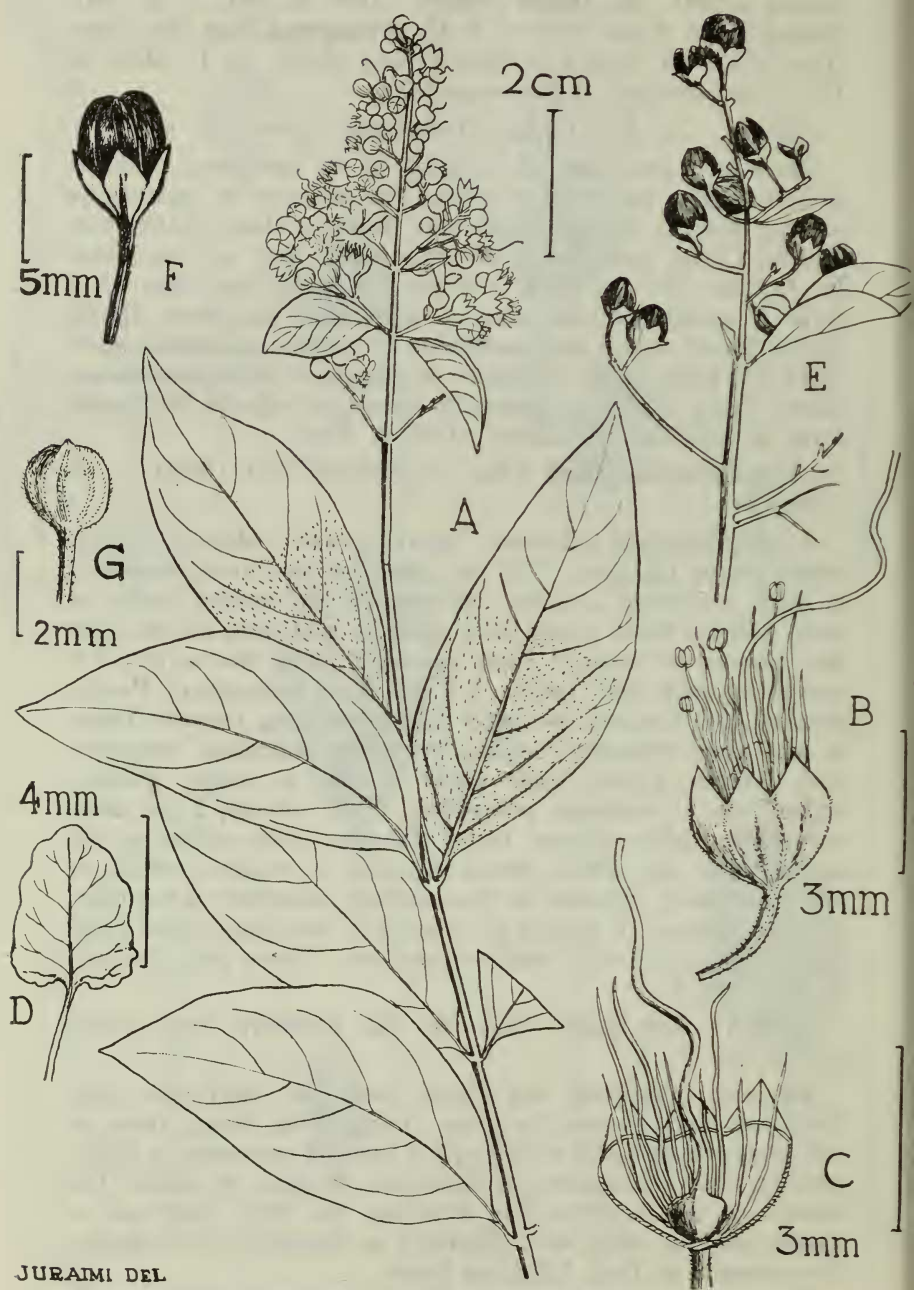


Fig. 34. *L. yangii* Chun (Ford 1,719 in A).

A, Fertile twig. B, Flower after anthesis. C, Longitudinal section of flower. D, Petal. E, Twig with capsules. F, Fruit enlarged.

CHINA: Hupeh Prov. mountains, alt. 1,950 m (Silvestri 1,558a: A — **lectotype** & 1,558: A). **Chekiang** Prov. (Leg.? no. 1,740 = Lingnan Univ. Herb. No. 77,778 — A).

Silvestri's collections were the syntypes of Pampini's variety which are probably in Florence, the Arnold Arboretum's collections being the fragments (clastotypes) of the original specimen.

33. ***Lagerstroemia subcostata*** Koehne in Engl., Jahrb. IV (1883) 20; Engl. Pflanzenr. 17 = IV. 216 (1903) 260 *pro parte typica* & in Engl. Jahrb. XLI (1907) 102; Matsum et Hay., Enum. Pl. Form. (1906) 152 p.p.; Hui-Lin, Ic. Pl. Form. II (1912) 27; Rehder & Wilson in Journ. Arn. Arb. VIII (1927) 179 p.p.; Kanehira, Form. Trees (1936) 487 fig. 450; Hui-Lin, Woody Fl. Taiw. (1963) 927 fig. 247; Ohwi, Fl. Jap. (1965) 648. — **Fig. 35a, 35b (a).**

*L. subcostata* Koehne var. *hirtella* Koehne in op. cit. (1883) 21 & (1903) 260 (nom. illeg.).

*L. unguiculosa* Koehne in Engl. Bot. Jahrb. XLI (1907) 103; Hayata, Mat. Fl. Form. (1911) 116 & Ic. Pl. Form. II (1912) 27.

A shrub or small tree. *Leaves* ovate, elliptic or obovate-elliptic 3–9 cm long, 1.5–5.0 cm broad, often opposite or sub-opposite, distichous, glabrous above, glabrous or minutely pubescent beneath, chartaceous, acuminate at the apex, gradually cuneate to the base or sub-rounded, 4–7 nerved on each side; petiole 2–4 mm long. *Panicle* minutely greyish brown pubescent all over; pyramidal 10–30 cm long, terminal or axillary. *Flower bud* subglobose about 2 mm long (excluding  $\pm$  3 mm long pedicelliform base), 2 mm broad, 12–14 faintly ridged, shortly nipped at the apex. *Calyx* in flower cup-shaped, 2 mm deep, 3 mm broad; lobes 6 or sometimes more, erect. *Petals* broadly ovate, retuse above the claw, undulate in the margin, about 3 mm long, 4 mm broad (claw 3.5 mm long). *Stamens* many, 3–6 longer and thicker, the rest subequal. *Ovary* glabrous, subglobose with a long slender style. *Fruiting calyx* obconical, 2 mm deep, abruptly narrowed into  $\pm$  5 mm long pedicelliform base. *Capsule* elliptic-oblong, 7–9 mm long, 4–6 mm in diam., 4–6 valved.

CHINA: **Kiangsu**, Ihsing-Wu-Fu (Ling 12,286: UC). **Anhwei**, Chu Hwa Shan (Ching 2,891: A & E); Chemen (Ching 3,202: A, E & UC). **Kiangsi**, Yuen Shan Hsien (Hu 1,302: A & UC); Kiennan near Tung Lei (Lau 4,116: A); Wu-ning (Hsing 5,038: A). **Chekiang**, Chun-an Hsien (Keng 656, 745: A & UC); Kai-Hwa Hsien (Hu 512: SING).

FORMOSA: Taihoku (Sasaki & Hsieh 224?: A & PNH; Sasaki 21,470: A & UC; Wilson 10,263: A); Chichijima, Yanku (Wilson 8,246: A); Takao (Wilson 9,875: A); Bankinsing (Henry 43: E; 561: A & E; 438: BM); Tamsui (Henry 1,736: BM); Tehow (Henry s.n.: A); South Cape (Henry 958: A; 966: A & BM; 1,220: A); Sylruta Paehiran? (Faurie 56: A); Sepibus,

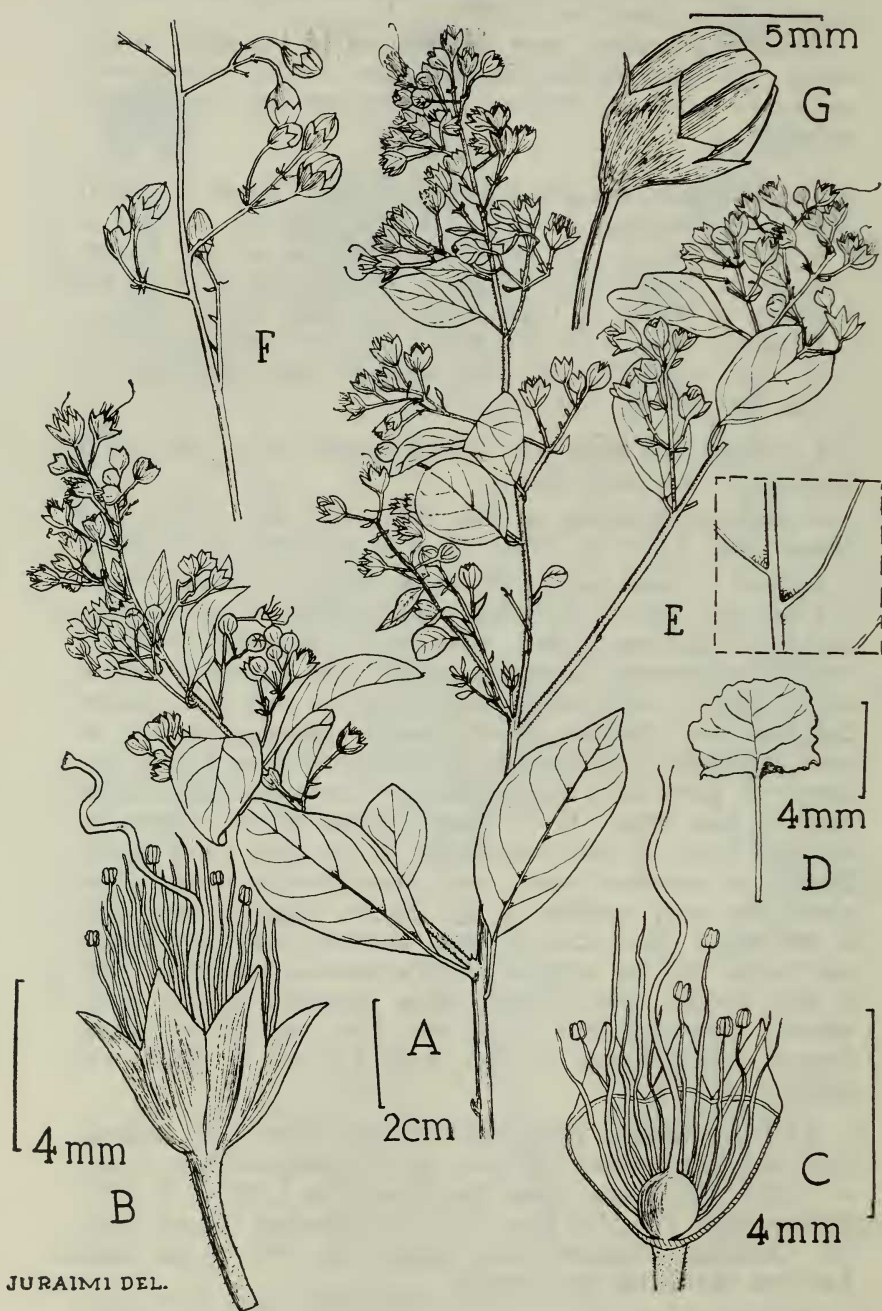


Fig. 35a. *L. subcostata* Koehne (Gressitt 433 in A).

A, Fertile twig. B, Flower. C, Longitudinal section of flower. D, Petal. E, Nerves to show hairy. F, Capsule.



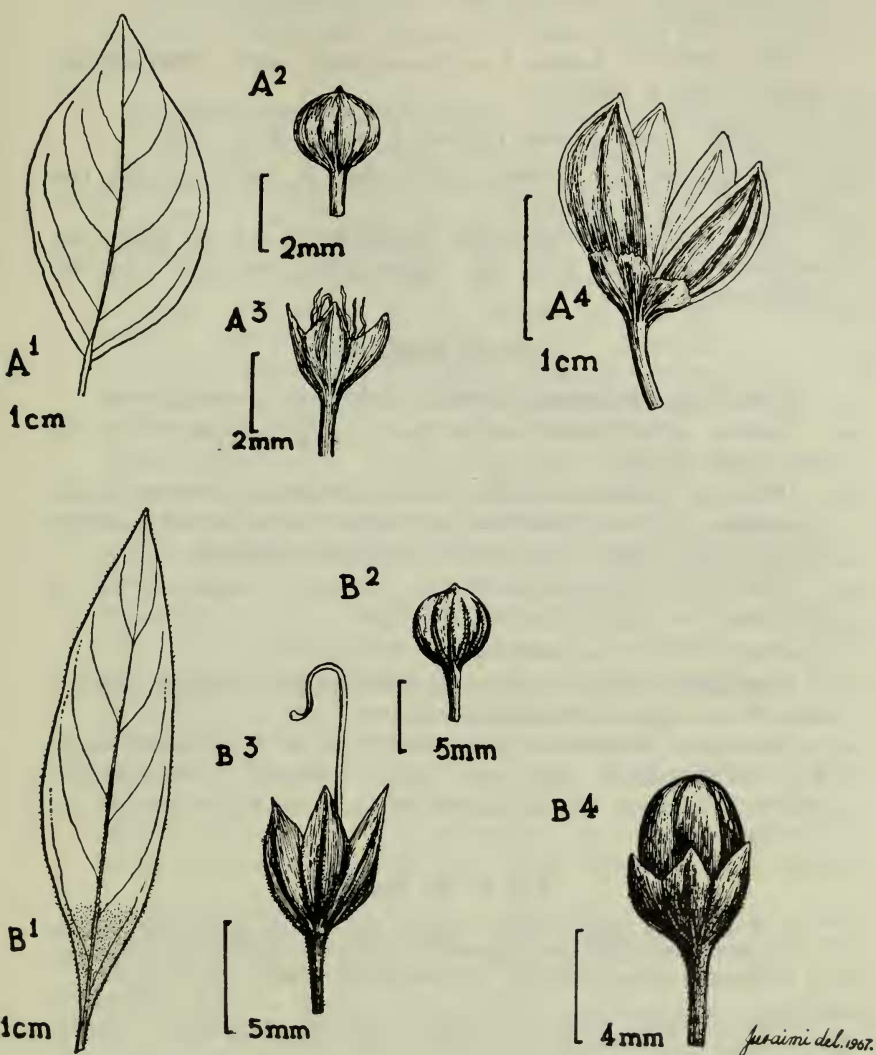


Fig. 35b. (a) *L. subcostata* Koehne (A<sup>1</sup>–A<sup>3</sup> Oldham 111/1 in GH; A<sup>4</sup> Oldham 119/2 in GH).  
 (b) *L. yangii* var. *ambigua* (B<sup>1</sup>–B<sup>3</sup>: Silvestri 1,558a in A lectotype; B<sup>4</sup>: Leg.? 1,740 in A).

A<sup>1</sup>, Leaf. A<sup>2</sup>, Flower bud. A<sup>3</sup>, Flower after anthesis. A<sup>4</sup>, Capsule with longitudinal dehiscence. B<sup>1</sup>, Leaf show the hair. B<sup>2</sup>, Flower bud. B<sup>3</sup>, Flower after anthesis. B<sup>4</sup>, Capsule.

Mokuto (Faurie 1,018: A); loc. incert. (Ream 413: UC; Tanaka 49: GH & UC; Henry 1,491: A); (Oldham 111/1 & 119/2 GH — **syntypes?**) Canyon (Gressitt 433: A & BM); Tamali, Taitung (Keng K. 1,400: A); Senzyo-zan, Taihoku-si (Tanaka 17,819: A, E, GH & SING).

PHILIPPINES: **Luzon**, Los Bonos (Sulit 3,408: SING; Steiner 40,084: PNH & SING).

JAPAN: **Bonin Islands** (Wilson 8,246: A & s.n.: A).

We support Li's opinion (1963) that in Formosa only one species is known as wild.

There are some large leafed forms which do not show any material differences from the typical ones and there are also intermediate forms.

### Subsect. *Banglamea*

Subsection ***Banglamea*** Furtado et Montien subsect. nov.

Subsect. *Adambeola* Koehne op. cit. (1833) 30 & (1903) 262 pro parte atypica.

Ovarium glabrum. Calyx costis sepalorum numero duplo praeditus, vel costis indistinctis tomento tectis et infra sinum corniculatus. Sepala intus supra medium tomentosa.

DISTRIBUTION: Subhimalayan region of Eastern India & Pakistan, China, Indochina & Thailand.

HOLOTYPE: *L. fordii* Oliv. et Koehne.

This differs from the subsection *Adambea* in having the superior half of the sepals tomentose within.

The name *Banglamea* is latinized form of Indochinese name for *Lagerstroemia* spp. of this subsection. Unfortunately *Adambeola* is not available here, since it has to be typified on *L. hypoleuca*.

### Key to the Species

- 1a. Flower buds slightly 12–14 ridged, light brown tomentose, with a wart-like cornicle at the base of each sinus of sepals, long pedicellate. (Fruiting calyx completely reflexed. Fruit elongate 17 × 10 mm) ..... *L. duperreana*.
- 1b. Flower buds without cornicles, minutely pubescent, distinctly ridged ..... 2.
- 2a. Leaves up to 12 cm long, 6 cm broad, oblong or ovate-lanceolate, dark-green above, greenish beneath, rounded or nearly rounded at the base, deciduously puberulous beneath with tuft of persistent hair in the nerve axils. (Side nerves 8–10. Petiole 8–9 mm long. Fruiting calyx thin, erect. Fruit 5 mm long, 3 mm broad. No flower) ..... *L. minuticarpa*.
- 2b. Leaves rhomboidally ovate, elliptic or obvate, glabrous on both surfaces ..... 3.
- 3a. Leaves elliptic or obovate, attenuate obtuse or almost acute at base, rounded or shortly apiculate at apex, 8–12 cm long, 3–5 cm broad, with about 10 nerves on each side; petiole 3–4 mm long ..... *L. gagnepainii*.
- 3b. Leaves rhomboid elliptic ovate or elliptic, more or less cuneate on both sides, acuminate or acute at apex, 7 cm long, 3.5 cm broad, with 4–6 nerves on each side; petiole 7 mm long ..... *L. fordii*.

34. ***Lagerstroemia duperreana*** Pierre ex Gagnep. in Lec. Nat. Syst. III (1918) 358 et Flor. Indoch. II (1921) 948; Craib, Fl. Siam. Enum. I (1931) 721. — **Fig. 36.**

*L. thorelii* Gagn. in Nat. Syst. III (1918) 362 et Flor. cit. II (1921) 947; Pham and Nguyen, Fl. Vietn. (1960) 350 t. 126 fig. C; **syn. nov.**

**Lectoholotype:** COCHINCHINA: Dinh. Mts. (Pierre 4,998: P).

A tree about 25 m high. *Leaves* oblong, or elliptic-oblong, sometimes obovate, 15–17 cm long, 2.5–5.5 cm broad, acuminate or acute or sub-rounded at the apex, gradually cuneate when young, later sub-rounded at the base, glabrous on both sides, 6–11 nerved on each side, not prominent above but quite prominent and reddish brown beneath as also the reticulations reddish; petiole 3–5 mm long. *Panicle* pyramidal or almost cylindrical, deciduously puberulous with light brown hairs, 10–30 cm long, 5–15 cm broad, with ultimate branchlets dichotomous or trichotomous; the mid-flower sessile with a very long pedicelliform (up to 15 mm long base); pedicel 5–8 mm long. *Flower bud* whitish tomentose, turbinate, lateral one 10–15 mm long (including 4–7 mm long pedicelliform base), obscurely 12 ridged or more, often bearing a wart at each sinus, mammillate at the apex. *Calyx* in flower cup-shaped, 13–15 mm long (including 5–9 mm long pedicelliform base), 6 mm in diam.; lobes 6, 3 mm long, patent or reflexed, tomentose in the superior half within. *Petal* obovate, about 15 mm long (including 2–3 mm long claw), 10 mm broad, undulate in the margin. *Stamen* many, subequal. *Ovary* short, oblong, glabrous. *Fruiting calyx* cup-shaped, ridgeless or nearly so, tube 5 mm deep, 10 mm in diam.; lobes reflexed more or less tomentose in the superior half within; stalk 7–12 mm long. *Capsule* oblong, 15–17 mm long, 10 mm in diam.; usually 6 valved, each valve slightly grooved dorsally.

**THAILAND:** *North-Eastern:* **Ubon Prov.** (Chirn 18 = BKF 24,193: SING). *Eastern:* **Korat Prov.,** Chantuk on the Kao Sisiat (Kerr 9,089: BM & E & PNH). *Central:* **Saraburi Prov.** (Rananand 9 = BKF 10,754: SING). *South-eastern:* **Trat Prov.** (B.S. 176 = BKF 9,660: SING and Smitinand 1,373 = BKF 7,324: SING).

**INDOCHINA:** **Cochinchina,** Prov. Baria, Dinh Mountains (Pierre 4,998: GH — **lectoholotype**); Prov. Bien-Hoa at Bao-Chiang (Pierre 4,998: SING — **lectoparatype**). **Cambodia,** Kampong Cham (Bejaud 696: A); Stung-Streng (Thorel 2,241: E — isosyntype of *L. thorelii*). **Laos,** Khon Isle (Thorel 2,241: A & BM — isosyntypes of *L. thorelii*).

Both Thorel & Pierre seem to have numbered their specimens after a preliminary study in the herbarium so that different collections bear the same number. Thus the isolectotype of *L. duperreana* was collected in May 1866 in the Baria Province,

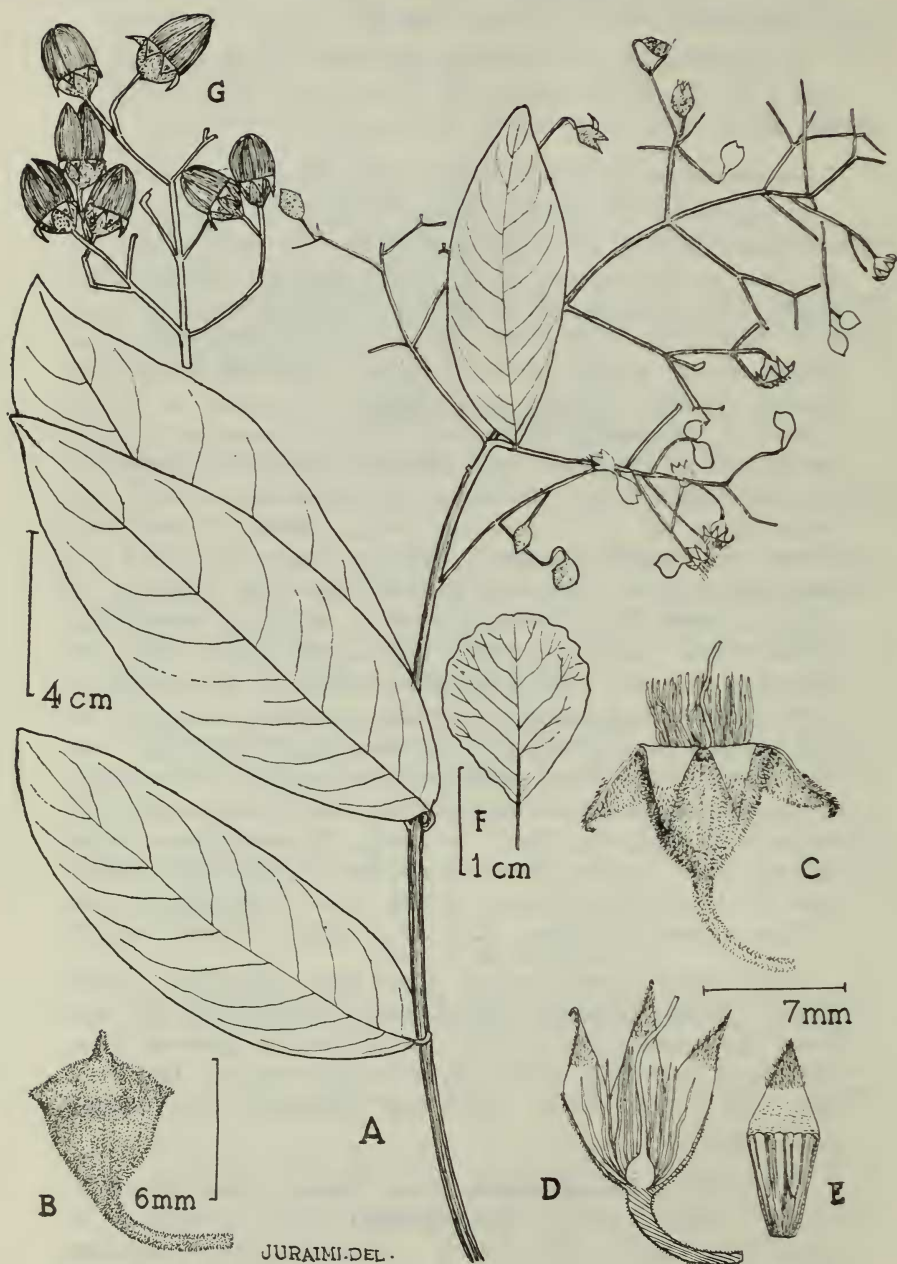


Fig. 36. *L. dupereana* Pierre ex Gagnep. (A-F. Thorel. 2.241 in E — isosyntype of — *thorelii*; G: Pierre 4,998 in GH — lectoholotype).

A, Fertile twig. B, Flower bud with warts at each sinus and a nipple at the apex. C, Flower after anthesis. D, Longitudinal section of flower. E, Calyx dissected. F, Petal. G, Twig with capsules.



while the specimen at Bao Chiang in Bien-hoa province were collected in September 1861, but both collections bear Pierre n. 4,998.

There is a great deal of difference in the leaves and flowers of this species, depending upon ecological factors and some flower buds have short or long nipples in the same inflorescence.

35. ***Lagerstroemia minuticarpa*** Debberm. ex P.C. Kanj. in Assam For. Rec. Bot. I (1934) 9: Kanj., Kanj. & Das, Flor. Assam II. (1938) 311. — **Fig. 37.**

A tree. *Leaves* elliptic or oblong-elliptic, 7–13 cm long, 4–6 cm broad, greenish, glabrous above, paler beneath and often pubescent in the axil of side nerves and mid nerve, acuminate at apex, sub-rounded at base, 8–12 nerved on each side; petiole about 8 mm long. *Panicle* subpyramidal, about 15 cm long, 15 cm broad, brownish pubescent all over. *Calyx* whitish tube about 6 mm long, broadly campanulate, thinly pubescent, tube about 2 mm deep, 12 ribbed; lobes 6, deltoid, acuminate, slightly pubescent towards the apex within. *Petals* 6, white, oblong, about 2.5 mm long, crumpled, margins crisp, claw minute. *Stamens* about 12; filament filiform, 6 stouter than the others. *Ovary* subglobose, style curved, exserted, ovules numerous. *Fruiting calyx* funnel-shaped,  $\pm 1$  mm deep, (excluding 2–4 mm long pedicelliform base),  $\pm 3$  mm broad, 6 lobes about 1–1.5 mm long; 12 ridged, puberulous. *Capsule* ellipsoid,  $\pm 5$  mm long,  $\pm 3$  mm in diam., brownish in colour, 3–5 valved.

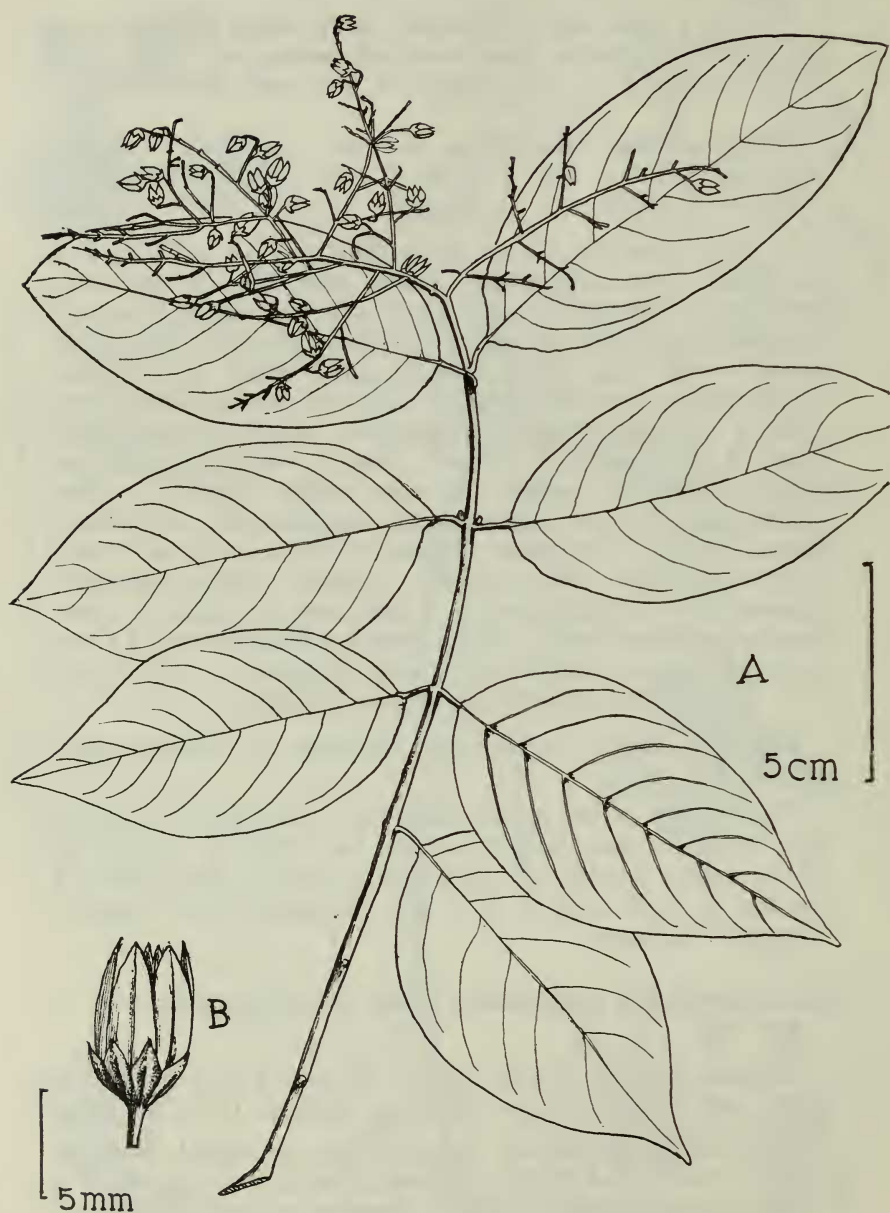
INDIA: Assam, North East Frontier at Kerim (Deka 17,041: E).

The holotype of the species which was collected in North East Frontier region near Bonjur, has not been seen by us, but the above quoted fruiting specimen was collected subsequently in the Kerim forest in June 1938 and distributed from Assam as “co-type” specimen.

36. ***Lagerstroemia gagnepainii*** Furtado et Montien **nom. nov.** — **Fig. 38.**

*L. glabra* Gagnep. in Not. Syst. III (1918) 359 et Fl. Indoch. II (1921) 949: (not *L. glabra* (Koehne) Koehne, 1907); **basinym.**

Tree, branchlets glabrous. *Leaves* elliptic or oboval, attenuate at base, rounded and shortly apiculate at the tip, 8–12 cm long, 3–5 cm wide, subcoriaceous, glabrous, 10-nerved on each side; petiole 3–4 mm long, glabrous. *Inflorescence* terminal, 20 cm long or more, glabrous or sparsely pilose, with leafy bracteoles in the lower parts; lower branches up to 8 cm long. *Flower buds* globose, slightly costulate, thinly cinereous tomentose. *Calyx* tomentose, 12 costulate, ridges almost indistinct because of the tomentum outside, costulate and annulate within, 6–7 mm long in the tube; lobes triangular, shortly appendiculate, 4–5 mm long, somewhat tomentose below the apex within. *Petals* obovate,



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Fig. 37. *L. minuticarpa* Debberm. ex. P.C. Kanj. (Deka 17,041 in E).  
A, Twig with capsules. B, Capsule.

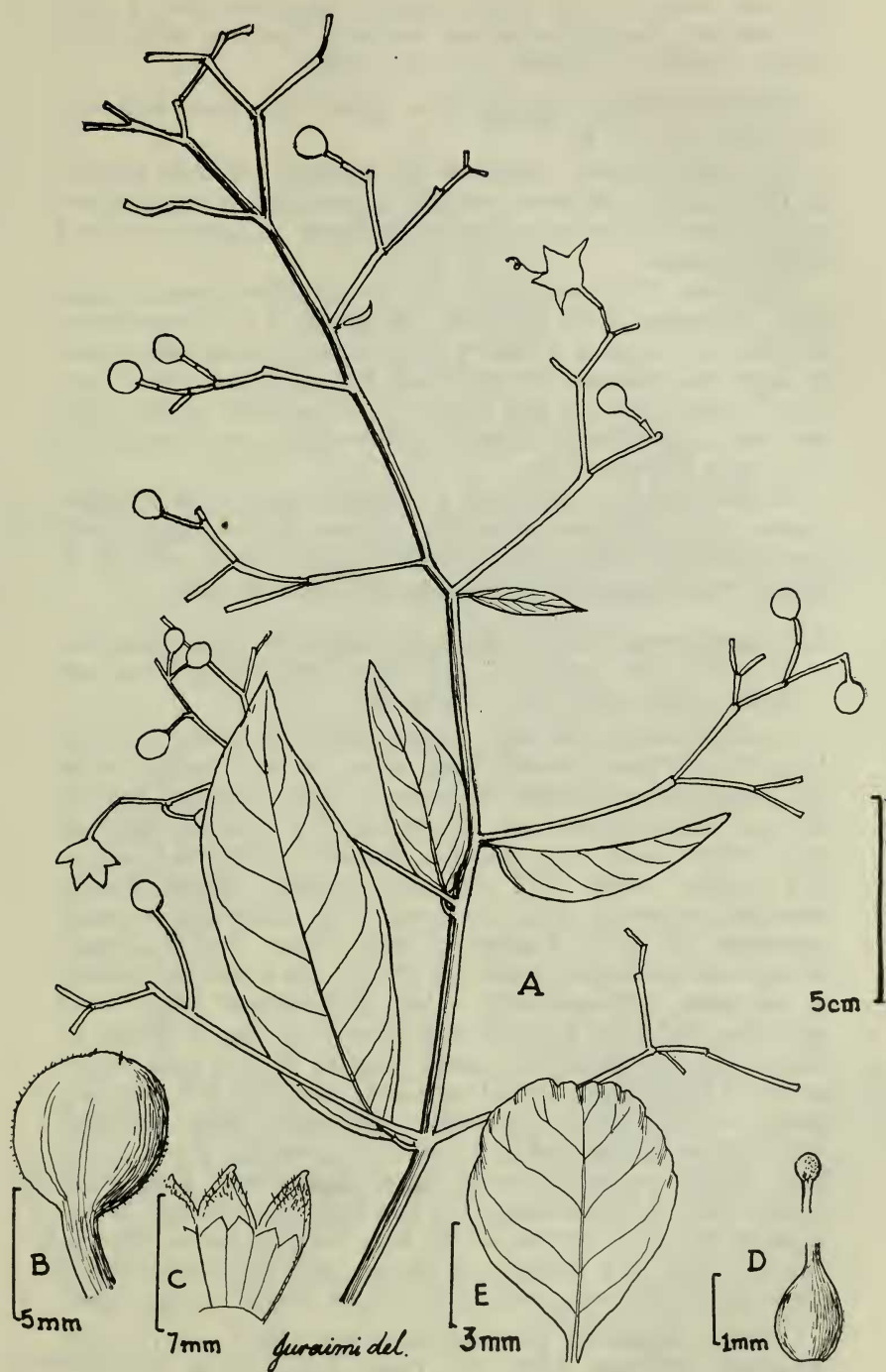


Fig. 38. *L. gagnepainii* Furtado et Montien (Lecomte & Finet s.n. in P — Photolog from Paris).

A, Fertile twig. B, Flower bud. C, Calyx dissected. D, Ovary and stigma. E, Petal.

15 mm long, 12 mm wide, gradually narrowed into a claw 1.5 mm long. *Stamens* numerous, inserted at the base of the tube. *Ovary* glabrous, 6 locular. *Fruit* not known.

COCHINCHINA: loc. et lector ignoti, sub. nom. vern. *Cay Tau Vang* (s.n. — P).

This species known only from the holotype collection received in Paris in 1912. We have seen only a photocopy of the specimen with a flower diagnosis made by Gagnepain. It appears to be a distinct species.

Gagnepain (1918) states that this species differs from *L. fordii* Oliv. et Koehne in the following: (1) petiole is 2–3 times shorter and the leaf lamina is without a long acumene; (2) the inflorescence is larger and glabrous; (3) the flower-bud is globose with a very small nipple at the top and without any cornicules; (4) the ridges are very slight, hardly distinct; (5) the petals are obovate, the claw being 2 times shorter.

He differentiates it also from *L. thorelii* Gagnep.: (1) in elliptic leaves; (2) in much less dense inflorescence; (3) by globose flower buds having 12 faint ridges without any cornicules and (4) in petals being neatly obovate and its claw twice as short.

37. *Lagerstroemia fordii* Oliv. and Koehne in Engl. Pflanzenr. 17 = IV. 216 (1903) 262. fig. 56D; Chung, Cat. Trees and shrubs China (1924) 181. — **Fig. 39.**

A shrub about 3 m high. *Leaves* elliptic or ovate, 3–10 cm long, 2–4 cm broad, usually dirty colour on both surfaces when dry, acuminate or caudate acuminate at apex, narrowed towards the base and decurrent into petiole, minutely pubescent on both sides when young, later glabrous, minutely gland-dotted above, 5–8 nerved; petiole 5–12 mm long, slightly winged. *Panicle* terminal, pyramidal, 8–20 cm long, 3–12 cm broad, minutely pubescent all over, bearing a small linear leaf-like bract. *Flower-bud* deciduously pubescent all over and somewhat bearded at the sinus, turbinate with a long pedicelliform base, 10–12 mm long (including 4–7 mm long base), 3–4 mm in diam., 12 ridged and 12 channelled, shortly nipped at the apex. *Calyx* in flower funnel-shaped, 9–11 mm long (including 5–8 mm long base), 4–5 mm broad, the middle one sessile, lateral provided with a short pedicel; lobes 6, erect or spreading, about 2 mm long, slightly pubescent in the upper half within. *Petal* ovate about 8 mm long (including 3–4 mm long claw), 4 mm broad, acute at the apex, cordate at the base undulate in the margin. *Stamen* many, 3–6 thicker and longer, the rest shorter. *Ovary* short, oblong, glabrous; style about 10 mm long. *Fruit* (not seen).

CHINA: **Hongkong** in D'Aguilar Cape (Leg.? 1,011: BM); Aberdeen (Bodinier 1,261: E; Taam 1,401: A & UC and 9,206: A).

The holotype was collected by Ford in Lan Tao island near Hongkong. No. 1,011 in BM (D'Aguilar Cape) differs slightly from other specimens in shorter petiole and in glabrescent flower buds and calyces.





Fig. 39. *L. fordii* (Bodinier 1,261 in E).

A. Fertile twig. B. Flower bud. C. Flower. D. Longitudinal section of flower. E. Part of calyx.

Section **Trichocarpidium**

Section **Trichocarpidium** Koehne in Engl. Pflanzr. 17 = IV. 216 (1903) 263; Sect. 2 *Adambea* Subsect. 3 *Trichocarpidium* Koehne in Engl. Jahrb. IV (1883) 31.

Ovary tomentose.

Subsect. **Trichocarpidium**

Ovary tomentose, but calyx lobes glabrous within.

DISTRIBUTION: China, Burma, Thailand, Indochina, Flores Archipelago, New Guinea & N. Australia.

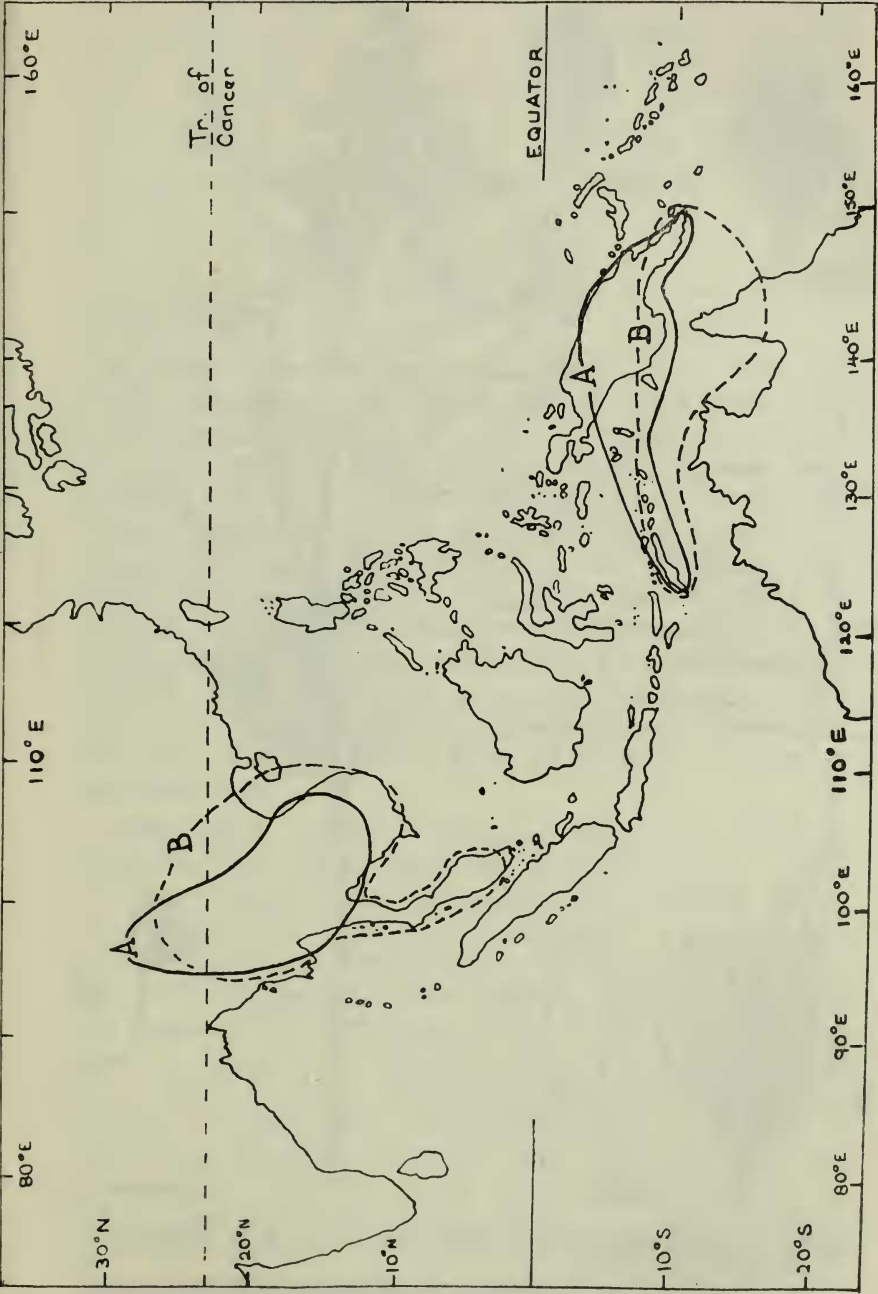
TYPE SPECIES: **L. tomentosa** Presl.

## Key to the Species

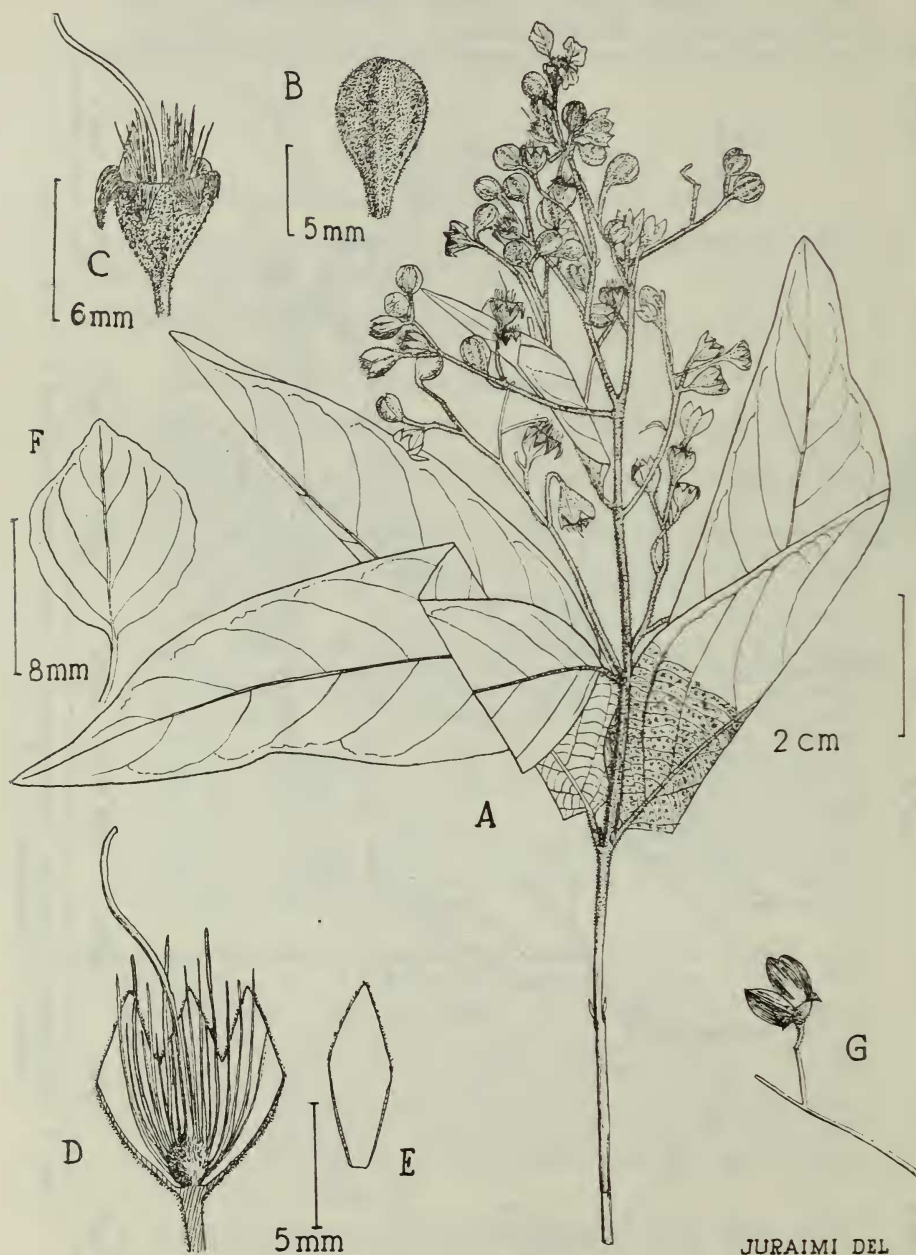
- 1a. Calyx yellow tomentose with 12 ridges. (Leaves lanceolate or ovate-elliptic) ..... 2.
  - 1b. Calyx glabrous or ferruginous yellow tomentose with 6 ridges. (Leaves tomentose or not) ..... 3.
  - 2a. Calyx light yellow tomentose. Fruiting calyx with ridges prominent. (Leaves lanceolate up to 17 cm long, 6 cm broad, acuminate or acute, tomentose on both sides when young later pubescent beneath along the veins and reticulations, side nerves 8–12) ..... *L. tomentosa*.
  - 2b. Calyx yellow tomentose. Fruiting calyx ridges unequal, 6 obtuse and 6 winged. (Leaves ovate-elliptic, 7–16 cm long, 5–10 cm broad, round or subcordate at base, shortly acuminate at the apex, coriaceous, yellow pilose on nerves above, tomentellose below, side nerves about 10) ..... *L. dielsiana*.
  - 3a. Fruiting calyx obscurely ridged, glabrous; stalk 8 mm long; lobes  $\frac{3}{4}$  long as the calyx tube, reflexed. (Leaves glabrous, obtuse or emarginate at the apex) ..... *L. petiolaris*.
  - 3b. Fruiting calyx prominently ridged, ferruginous yellow tomentose; stalk short 3–4 mm long; lobes less than  $\frac{1}{2}$  of calyx tube. (Leaves yellow tomentose beneath, glabrescent later, obtuse at the apex; hairs on the sepals within often fall off) ..... *L. archeriana*.
38. **Lagerstroemia tomentosa** Presl, Bot. Bemerck. (1844) 142; Walp., Ann. Bot. I (1848) 295; Kurz, Fl. Burma I (1877) 522 and in Journ. Asiat. Soc. Beng. XLVI (1877) 88; Clarke in Hook. f., Flor. Brit. Ind. II (1879) 578 p.p.; Koehne in Engl. Jahrb. IV (1883) 237 and Engl., Pflanzenr. 17 = IV. 216 (1903) 264; Brandis, Ind. Trees (1911) 339; Gamble, Man. Ind. Trees (1912) 375; Traup, Silv. Ind. Trees II (1921) 601; Gagnep. in Fl. Indoch. II (1931) 958; Craib, Fl. Siam. Enum. I (1931) 726. — **Fig. 40.**

*L. tomentosa* Presl. var. *caudata* Koehne in Engl. Jahrb. XLII, Berbl. 97 (1908) 51; Craib in Kew Bull. (1911) 54.

A tree  $\pm$  14 m high. *Leaves* lanceolate or elliptic, 5–24 cm long, 2–8 cm broad, acuminate or acute usually obtuse, yellow stellately tomentose on both surfaces when young, later glabrescent along the midrib above and pilose beneath; 7–12 nerved on each side; petiole 4–8 mm long. *Panicle* terminal, pyramidal, 6–20 cm long, 4–15 cm broad, yellow tomentose with deciduous linear bracteoles. *Flower bud* 5–6 mm long, 4–5 mm in diam.,



Map 3. Distribution of Section Trichocarpidium: Subject, Trichocarpidium (—A—); Subject, Trichosepalum (---B---).



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Fig. 40. *L. tomentosa* Presl. (A-E: Helfer 2239 in K — Prob. isoholotype; G: Griffith 2,238 in K).

A, Fertile twig. B, Flower bud. C, Flower. D, Longitudinal section of flower. E, Part of calyx shows inside. F, Petal. G, Capsule.



turbinate, 12 or more ridged, shortly pedicelliform at base, often having a wart-like growth at each sinus. *Calyx* 5–6 mm long 4–5 mm in diam., cup-shaped, abruptly narrowed into short 1–2 mm long pedicelliform base; lobes 6, reflexed, glabrous inside. *Petal* obovate about 15 mm long (including 5 mm long claw) 9 mm broad, undulate in the margin. *Stamens* many, 3–6 thicker and longer, others subequal. *Ovary* subglobose yellow tomentose, style slender about 15 mm long. *Fruiting calyx* saucer-shaped about 3 mm deep, 9 mm in diam., adpressed to the fruit, deciduously yellow tomentose; pedicelliform base 2–3 mm long; lobes reflexed, brittle. *Capsule* oblong, 12–17 mm long, 9–12 mm in diam., usually 6 valved.

**CHINA:** **Yunnan** (Wang 77,837 & 78,608 & 79,202 & 80,708 & 80,843: A).

**BURMA:** **Yamethin**, Pyinmana, Tetshien (Lace 4,558: E); Mintyin (Smales s.n.: E); Ngalaik Chaung (Lace 4,554: CAL & E). **Shan State** (Collett 563: CAL); Meh Len (Rock 2,102: A & UC); Nam Live (Kingdom-Wqrd 8,870: A). **Salween Distr.** (Meebold 16,718: CAL). **Pegu**, Meaday (Scott s.n.: E & GH); Yomah, Rangoon (Kurz 1,344: CAL, E & 1,956 & 1,976: CAL); Hautawaddy (Lace 2,894: E); Pakokku, Saw (Dickason 8,627: SING). **Rangoon** (Weiste s.n.: BM & Parkinson 14,058: A & Dickason 5,587 & 5,837a: A). **Tenasserim** (Meebold 15,145 & 15,253: CAL); Below Tayet (Griffith 2,238: K). **Moulmein** (Helfer Kew distr. 2,239: A, GH & K — probably **isoholotype** & Reliq. Helf. n. 30: A, BM & E — probably **isoholotypes**); Yauaungmyin (Mg. Kyaw Zan 17: A); loc. incert. (Tottingham s.n.: CAL & Mg. Khaw 2: E).

**THAILAND:** *Northern:* **Chiengmai Prov.**, Doi Chiengdao (Khantchai 161 = BKF 12,389: BKF & KEP; K.B. 332 = BKF = 17,133: SING); Huay Tat (Smitinand 4,192: BKF); Muang Fang (Hosseus 600: BM & E — **isosyntypes of var caudata**); Mae Patang (Garrett 1,208: A & E); Doi Sutep (Hosseus 512: BM & E — **isosyntypes of var caudata**); Chiengmai to Chieng Rai (Rock 1,832 & 1,853: A & 1. 694: A & UC). **Lampoon Prov.**, Mae Lee (Vanpruk 93: BKF). **Prae Prov.** (Pramual 2 = BKF 2,503: BKF; Pis 13 = BKF 1,224: BKF); Huay Rai (Opus Promdet 5: BKF); Huay Yen (Yam Trykhao 16 = BKF 9: BKF); East Mae-Yom (Thai For. Dept. Coll. 2,503: A); Pak Kawng (Kerr 2,554: BM & E); Ban Pa-Dang (Tongbi 4 = BKF 5: SING); Mae Had (Vibulvonakit s.n. = BKF 10: BKF), loc. incert. (Srichun 4 = BKF 2,503: SING). **Utaradit Prov.** (Kerr 5,884: BM). **Kampeng Pet Prov.** (Kerr 5,961: UC). **Nakawn Sawan Prov.** (Vanpruk 268: BKF). **Tak, Raheng** (Kerr 5,884: E). *Central:* Nakawn Chaisee (Winit 513: BKF; Kerr 5,884: E). *South-Western:* **Kanburi Prov.** Sai Yok (Kai Larsen 8,923: A, BKF & E; Kostermans 1,120: A & SING); Bangkokasi (Kostermans

1,463: A); Wang Yai (Charoenmayu 5,473: A, BKF & KEP); Kao Tok (Kerr 19,537: BM); loc. incert. (Kerr 10,113: BM); Tripagodas (Kostermans 447: PNH, SING); Tasadet (Leg.? s.n.: BKF). loc. incert. (Thai For Dept. Coll. 13,334: BKF).

INDOCHINA: **Hue** (Square 294: A, BM, E, SING & UC & 337: A, BM, E, SING & UC).

CULTIVATED: Parks or Botanic Gardens: **India**, Dehra Dun Mani s.n.: SING). **Ceylon**, Peradeniya Gardens (Cult. Peradeniya 821: UC). **Malaysia**, Penang Bot. Gardens (Kamaradin 307: SING). **Singapore**, Bot. Gardens (Holttum 66: SING).

Helfer who collected near Moulmein in Burma and in the Andamans between 1832–38, sent some of his specimens to his native city, Prague, to be worked out by Presl at the University there (Munir in Gard. Bull. SING. XXI, 1966 p. 336). Many new taxa based on Helfer's specimens were published by Presl who quoted in his protolog the type locality but not the collector of the holotype. Now *L. tomentosa* does not occur in the Andamans and in any part of Bengal or India. Hence Helfer's specimens distributed under No. 30 from the Prague National Museum in 1837 as being from Bengal near Calcutta are probably the duplicates of the holotype from Moulmein as also Helfer's specimens of the species distributed from Kew under n. 2239. They are all therefore to be regarded as probable isoholotypes of the species.

In a specimen of Helfer's collection preserved in Kew the field label bears the following data: "In November 1937 Moulmein", and Koehne quotes "257" being Helfer's n. in a Kew specimen.

Clarke had stated that *L. pubescens* Wall. Cat. 2,112 was a mixture being *L. tomentosa* for its greater part but one specimen being *L. villosa*. But Koehne has quoted all Wallich 2,112 under the latter species. We have not seen Wallich's specimens.

As Clarke has noted, the fruiting specimens of the two species might be easily confused, but the leaves of *L. tomentosa* are stellately hairy beneath, while those of *L. villosa* are simple pubescent.

### 39. *Lagerstroemia dielsiana* Mansf. in Engl., Jahrb. LXI (1927) 24.

Tree 3–5 m tall, branchlets ochraceous tomentulose. *Leaves* broadly ovate or elliptic, 7–16 cm long, 5–10 cm broad, rounded and slightly acuminate at apex, rounded or subcordate at base, coriaceous, excepting the pilose nerves, glabrous above, tomentulose beneath, about 10 nerved on each; petiole 5 mm long, yellow tomentulose. *Panicle* terminal, 24–29 cm long, about 25 cm broad at base, with densely ochraceous tomentulose in branchlets. *Flower buds* rounded, subdepressed at apex, shortly apiculate, shortly pedicellate, tomentulose, calyx 6–7 mm deep, 12 ridges,

ridges unequal, 6 obtuse and 6 winged; lobes 2 mm long glabrous inside, reflexed. *Petals* 6, up to 4 mm long, suborbicular in the limb, not ciliate. *Stamens* unequal, 6 episepalous thicker and longer. *Ovary* densely pilose. *Capsule* 6 valved, 10 mm long, 8 mm diam., pilose at apex.

NEW GUINEA: *North-East Sepik* in the wet alluvial region (Ledermann 10,745: B — **holotypus**).

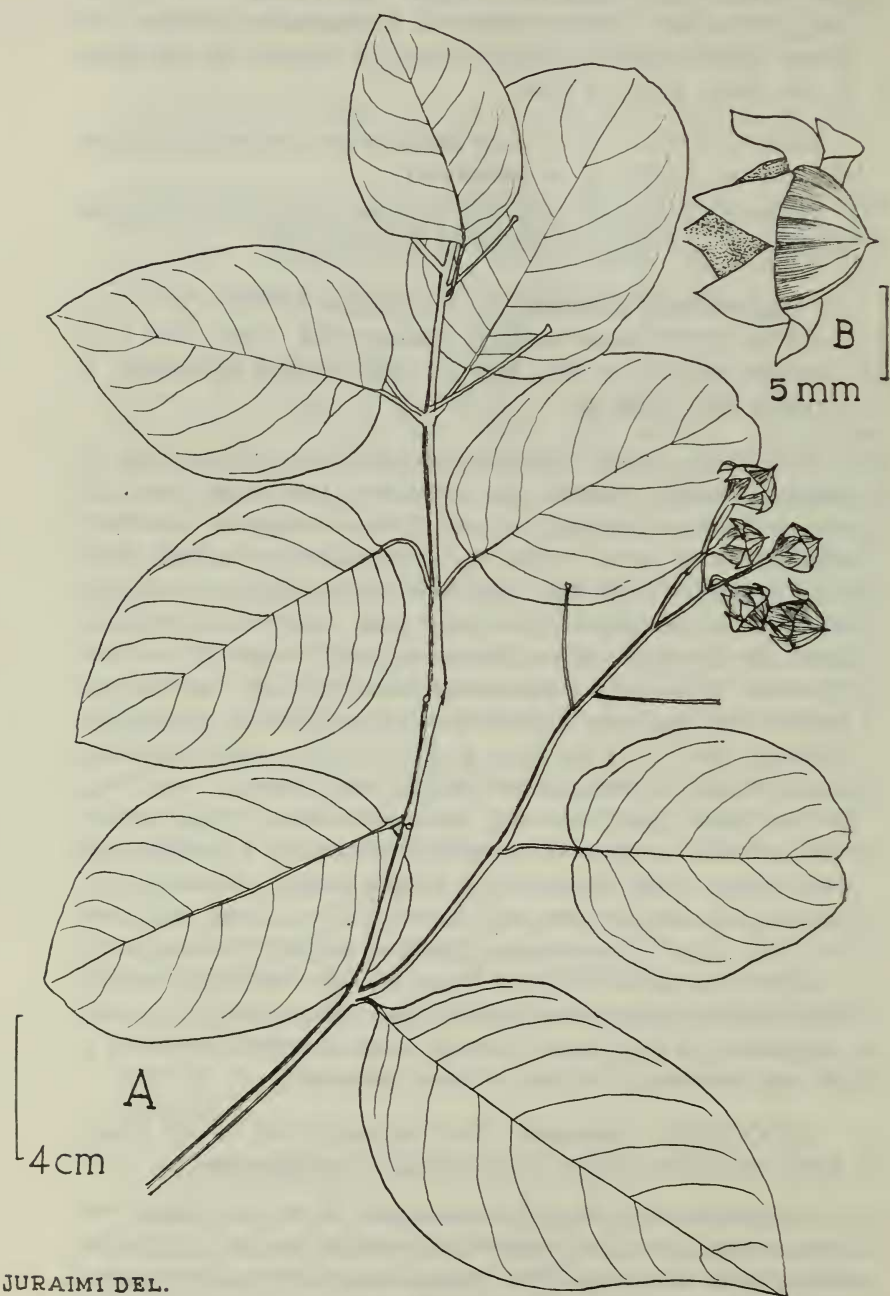
We have not seen the type, but from the description this species appears to be a form or variety of *L. archeriana*.

40. ***Lagerstroemia petiolaris*** Pierre ex Laness. Pl. Util. Col. Franc. (1883) 321; Koehne in Engl., Jahrb. XLI (1907) 102 *nom. nudum*; Gagnep in Not. Syst. III (1918) 360 & Fl. Indoch. II (1921) 359 — **Fig. 41**.

Tree 10–15 m tall, with glabrous branchlets. *Leaves* ovate or oblong, strongly rounded and sometimes shorter on one side, subacuminate or rounded at apex with an obtuse or sometimes emarginate tip, coffee brown in colour, glabrous on both sides, 6–10 nerved on each side, whitish in the margin, 6–13 cm long, 4.5–8 cm broad; petiole 15–20 mm long. *Inflorescence* terminal, short, few flowered, 3–6 cm long and as much broad. *Flower-buds* pyriform 12 mm long, glabrous, narrowed gradually into the base; pedicels 3–4 mm long. *Calyx* campanulate, glabrous, glaucescent-pruinose; tube 10–12 mm long, slightly 6 ridged; lobes 6, glabrous inside. *Petals* 6, orbicular or elliptic, long clawed, 3 cm long, 2–3 cm broad; claw 5 mm long. *Stamens* numerous, slightly exsert, with orbicular anthers. *Ovary* stellate tomentose, 6 locular; style twice longer than stamens with discoid stigma. *Fruiting calyx*, cup-shaped, abruptly narrowed into a 5–8 mm long base; tube 5–8 mm deep, 10 mm diam., glabrous, slightly 6 ridged, often a slight intermediate ridge at base, strongly reticulated outside; lobes glabrous inside, narrowly triangular, often apiculate. *Capsule* subglobose, 12 mm long, 10 mm in diam., 6 valved, tomentose at the top, surmounted with a 1–2 mm long apex.

INDOCHINA: **Cambodia**: Prov. Samrong-Tong on the Reang-Kong mountains (Pierre 928: SING — **isoholotype**).

Particulars about the inflorescence and flowers are taken from the protolog, since the isoholotype examined had only fruits just before their dehiscence. The fruiting calyx shows alternisepalous ridges reaching to the sinus, while its base has often vestiges of another ridge between the alternisepalous ones. The calyx tube bears many reticulations outside and also little warts which suggest bases of hairs. In view of this, this plant appears to have been evolved from one that had a 12 ridged hairy calyx.



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Fig. 41. *L. petiolaris* Pierre (Pierre 928 isoholotype in SING).

A, Fertile twig. B, Capsule,



41. *Lagerstroemia archeriana* Bailey, Synops, Queensl. Fl. I (1883) 196 & 809; Koehne in Engl., Jahrb. IA (1883) 408; Bailey, Queensl. Fl. II (1900) 678 t. 24; Koehne in Engl., Pflanzenr. IV. 216 = Heft 17 (1903) 264. — **Fig. 42.**

*L. engleriana* Koehne in op. cit. (1883) 24 & (1903) 267; Forschungsreise S.M.S. Gazelle IV (1889) 7 Siph. p. 38 t. 14; Koehne in Engl., Jahrb. XLI (1908) 104; Mansf. in Engl., Jahrb. 61 (1927) 25 **syn. nov.**

*L. floribunda* Jack *sensu* Bl., Mus. Lugd. Bat. II (1852) 126 t. 41B excl. holotypus; koehne *op. cit.* (1883) 34 & (1903) 266 quoad tab. Blumeana.

A shrub or tree 3–12 m high. *Leaves* oblong or elliptic or lanceolate 7–17 cm long, 4–9 cm broad, acute or shortly acuminate or sometimes obtuse at apex, obtuse or almost cordulate at base, ferruginous tomentose on both sides when young, later glabrous or glabrescent along the nerves, 5–11 nerved on each side; petiole 3–6 mm long. *Panicle* pyramidal or sub-pyramidal, 10–40 cm long, 4–22 cm broad, ferruginous tomentose, bearing small, deciduous bracteoles. *Flower bud* turbinate, abruptly pedicelliform at base, 10–12 mm long (including 3–4 mm long base), 6-ridged, prominent with 1 mm long nipple at apex. *Calyx* in flower 10–13 mm long (including 4–6 mm long base), 5–6 mm in diam., (longer and larger in the mid-flowers); lobes 6, 3 mm long, patent or reflexed, thickened along the margin outside, glabrous within, often provided at the sinus inside with a short reniform pouch. *Petal* oblong about 16 mm long (including 5–6 mm long claw), 10 mm broad, rounded or retuse at base. *Stamens* many, subequal. *Ovary* sub-globose, tomentose. *Fruiting calyx* sparsely tomentose, cupular or funnel-shaped above the pedicelliform base, 10–15 mm long (including 5–10 mm long base), with prominent straight ridges. *Capsule* oblong or elliptic, 15–18 mm long,  $\pm$  10 mm in diam., somewhat with a brittle nipple, 5–6 valved.

AUSTRALIA: Mitchell & Hodgkinson Rivers (Carr s.n.: A).

NEW GUINEA: **Northern Territory**, Morobe Distr., Lowe's Ford (Brass 32,313: A & LAE); Gusap (Womersley 4,746: A & LAE). **Papua**, Port Moresby, Trans-Laloki (Womersley 4,504: LAE & SING; Havel 17,377: LAE; Havel & School NGF 17,377: SING); loc. incert. (Brass 888: A); Obu (Carr 11,442: BM & SING); Mt. Lawes (Schodde 2,645: LAE); Brown River (Gray 12,907A: LAE); Daru Isl. (Brass 6,239: BM & LAE).

ARCHIPELAGOS IN THE FLORES SEA: **Tanimber islands**, Ilgnei-Otimmer (Neth. Ind. For. Serv. b.b. 24,246: A & SING); Jamdena island at Norkese (Borssum Waalkes 3,249: BM). **Timor**, Kupang, Noil Mina (Neth. Ind. For. Serv. b.b. 27,083: A & SING).

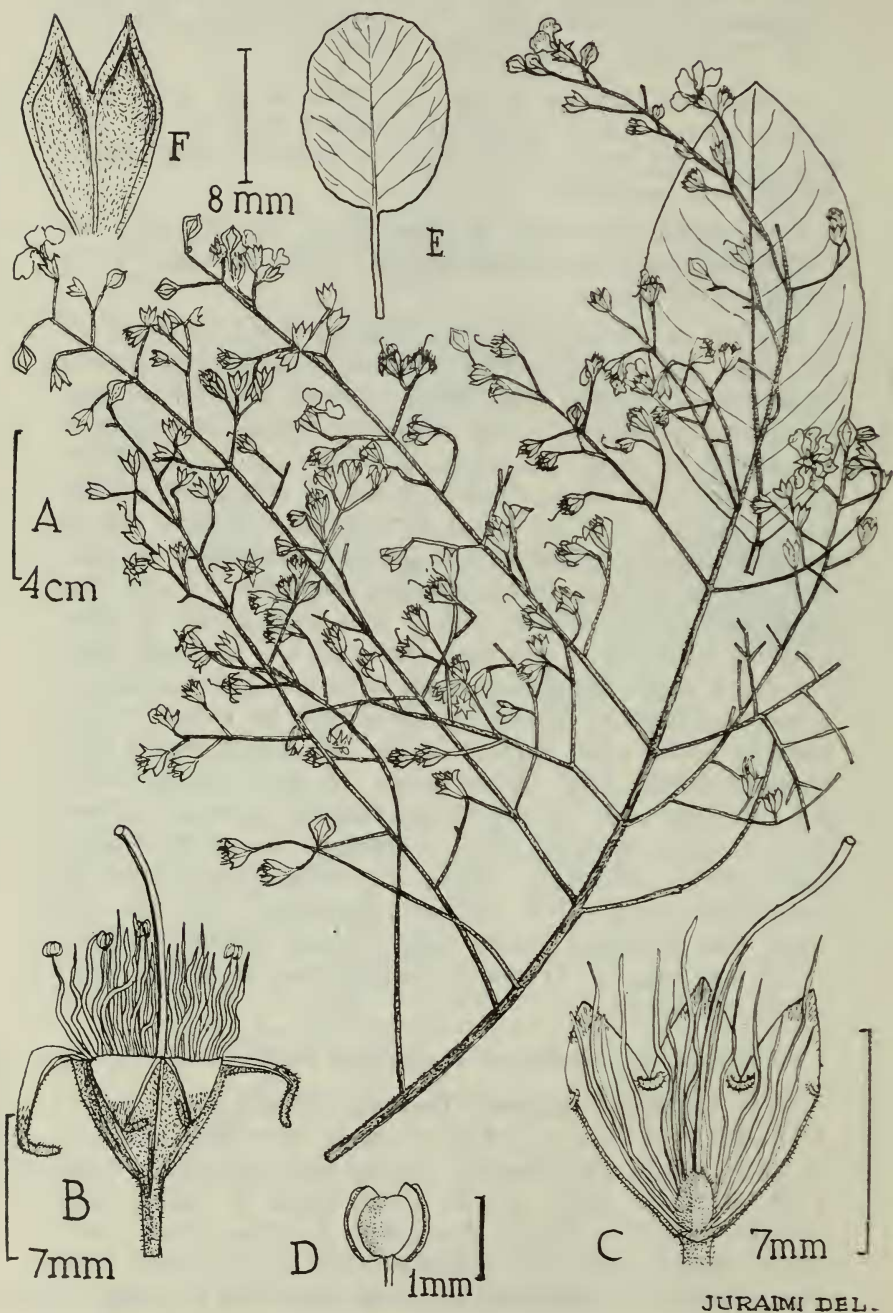


Fig. 42. *L. archeriana* Bailey (Brass 888 in A).

A, Fertile twig. B, Flower. C, Longitudinal section of flower. D, Anther. E, Petal. F, Part of calyx to show external structure.

Koehne (1883 p. 24 obs.) recognized that the tomentum on the inflorescence of *L. engleriana* is not of the type of Section *Pterocalymma*, but was akin to that of *L. floribunda*. However he had only a fruiting specimen and it is not rare to see the fruits and leaves becoming completely glabrous with age. The calyx lobes also have various stages of pubescence along the margins and the tips of the sepals within, even in the same inflorescence, but they cannot be said to be tomentose; the hairs on the lobes are few and fall off soon and some become completely glabrous within. Blume's t. 41B identified by Koehne as that of *L. floribunda* Jack is also this species.

The holotype of *L. engleriana* was Zeyl's collection from Kupang, Timor, but Mansfeld has erroneously stated it to be Taffenback 80 from New Guinea. In Koehne's t. 14 (1889) quoted above the filaments are shown adhering to the capsule, a condition seen also in younger capsules of *L. archeriana* and sometimes also in the fully mature ones. Bailey (Queensl. Agric. Journ. XV, 1905 p. 898) described a glabrescent variety (var. *glabrescens*) with glabrous or nearly glabrous leaves and smaller flowers, a description that agrees partly with our Timor and Tanimbar specimens. But since the branches in this species tend to root and from a shrubby clump, we are including to believe that specimens from shrubby growth have more cordate and hairy leaves and bear slightly larger flowers, while when the tree grows tall and woody (it would happen thus in a thick jungle) the specimens are glabrescent or nearly glabrous and the flowers somewhat smaller stalked. A field inquiry is therefore needed.

The episepalous costae seen in the flowering calyx are not of a permanent nature and seems to be due to a bulging caused in shrinking of the calyx. Even in the type depicted by Bailey has six-redged fruiting calyx, though the flower-buds seem to have a multicostate calyx. Hence *L. dielsiana* Mansf. in Engl., Bot. Jahrb. 61 (1927) 24 may belong here. I have not seen any authentic specimen but there is no material difference in the description.

### Subsect. **Trichosepalum**

Subsection. **Trichosepalum** Furtado et Montien.

Ovarium dense pilosum. Calycis lobi intus supra medium dense tomentosi, interdum tomento deciduo.

DISTRIBUTION: Burma, North Malaya, Thailand, Indochina, & South China.

TYPE SPECIES: **L. loudonii** Teysm. et Binn.

This subsection differs from Subsect. *Trichocarpidium* in that the calyx lobes are tomentose in the superior half within, but sometimes bear a few hairs along the margins and the tips of the puberulous or even glabrous.

The sepals in the species of Subsect. *Trichocarpidium* might sometimes the tomentum falls off to make the sepal look like sepals.



## Key to the Species

- 1a. Calyx obscurely ribbed or nearly smooth with ferruginous tomentose. Inflorescence shortly pyramidal or cylindrical with a few branches 2.
- 1b. Calyx with prominent ribs or wings. Inflorescence large with many long, irregular branches ..... 9.
- 2a. Inflorescence terminal or sometimes axillary at the end of a large side branch. Calyx without ribs or nearly so. Flower-buds funnel-shaped. Leaves pubescent when young, later glabrous or glabrescent; adult leaves upto 18 cm long, 2.2–7 cm broad, narrow, generally broadest below the middle ..... 3.
- 2b. Inflorescence on axillary branches. Calyx slightly ribbed. Flower-buds turbinate. Leaves large 15–27 cm long, 8–12 cm broad, broadly elliptic, almost rounded at apex or acute, sometimes broader in the upper half, yellow tomentose on both sides when young, later sparsely tomentose on the midrib above and pubescent beneath. (Fruiting calyx 12 mm long, narrowed abruptly into a pedicelliform base, base 4–6 mm long, lobes 6–7. Capsule subglobose upto 15 mm × 12 mm) ..... *L. loudonii*.
- 3a. Inflorescence with dirty brown tomentum. Flower obconical, sessile. Capsules about 8 mm long, 5 mm in diam. .... *L. calyculata*.
- 3b. Inflorescence with rusty ferrugineous or yellowish tomentum. Flower buds abruptly narrowed into a pedicelliform base, pedicellate. Capsules larged ..... 4.
- 4a. Adult leaves glabrous. Tomentum on flowers usually lighter coloured. Flower buds with a nipple over 1.5 mm long (*L. collinsae* shorter) 6.
- 4b. Adult leaves hairy or glabrescent beneath. Tomentum rusty coloured. Nipple in flower buds shorter, up to 1 mm long ..... 5.
- 5a. Leaves elliptic or narrow lanceolate, acuminate or acute at apex, grey and glabrous above, dark brown and hairy beneath, 5–7 cm long, 2–3 cm broad ..... *L. cochinchinensis* var. *cochinchinensis*.
- 5b. Leaves broadly ovate or ovate oblong, subacuminate and obtuse at apex; glabrous and grey or brown above, yellowish or light coloured and glabrescent beneath, specially with persistent hairs and some tomentum in the lower nerves and midribs; 4–11 cm long, 2–6 cm broad ..... *L. cochinchinensis* var. *ovalifolia*.
- 6a. Flower buds shortly nipped, nipple less than 1 mm long. (Capsule 12–13 mm long, 10–11 mm in diam., tomentose at apex)..... *L. collinsae*.
- 6b. Flower buds with a nipple over 1 mm long ..... 7.
- 7a. Inflorescence long. Petioles more than 3 mm long ..... 8.
- 7b. Inflorescence short about 3 mm long. Petiole up to 2 mm long. (Leaves 6–8 cm long, 3–4 cm (broad). Nipple 2 mm long ..... *L. noei* var. *noei*.
- 8a. Leaves ovate-elliptic, usually larger and elongate. Inflorescence usually pyramidal, many branched, generally thinly tomentose and with long, slender peduncles. Nipple of flower bud 2 mm long. Capsule 16 mm long, 12 mm in diam., tomentose all over ..... *L. noei* var. *longifolia*.
- 8b. Leaves narrow elliptic. Inflorescence generally shorter, fewer branched with thicker tomentum and thicker peduncles. Alabaster nipple up to 1.5 mm long. Capsule 14 mm long, 10 mm in diam., glabrous except at the top ..... *L. balansae*.
- 9a. Calyx 12–14 permanently ridged, equal or unequal; (lobes not thickened in the margin) ..... 10.
- 9b. Calyx with 6 permanent ridges, any ribs, if intervening superficial, not seen in fruit. (Fruiting calyx reflexed) ..... *L. lecomtei*.
- 10a. Calyx acutely ridged with auriculate appendices at the sinuses ..... 11.
- 10b. Calyx broadly ribbed without any auriculate appendix at the sinus 14.
- 11a. Auricles patent or knobbed; calyx ridges not winged ..... 12.
- 11b. Auricles incurved above the sinus; ridges winged at least in part ..... *L. spireana*.
- 12a. Auricles slightly knobbed or warted at the sinus or slightly patent ..... *L. anisoptera*.



- 12b. Auricles patent ..... 13.
- 13a. Leaves oblong about 10–14 cm long, 5–7 cm broad. Calyx tube in fruit about 7 mm deep, 10–12 mm broad. Capsule about 14 mm long, 10 mm broad ..... *L. siamica*.
- 13b. Leaves lanceolate or shortly oblong, 8–18 cm long, 2.5–6 cm broad. Fruiting calyx larger, tube about 10 mm deep, 10–14 mm broad. Capsule 15–22 mm long, 10–13 mm broad ..... *L. langkawiensis*.
- 14a. Fruiting calyx conspicuously ridged ..... *L. floribunda*.  
 (i) Leaves somewhat shorter; indumentum of the calyx, pale yellowish rusty. The ridges unequally prominent in the calyx tube ..... var. *brevifolia*.  
 (ii) Leaves longer, indumentum ferruginous coloured. Ridges equally prominent in calyx tube ..... var. *floribunda*.
- 14b. Fruiting calyx obscurely ridged.  
 (i) Fruiting calyx almost ridgeless ..... var. *sublaevis*.  
 (ii) Fruiting calyx slightly ridged ..... var. *subecostata*.

42. ***Lagerstroemia loudonii*** Teysm. et Binn. in Nat. Tijdschr. Nederl.-Ind. XXV (1863) 425 et Cat. Hort. Bog. (1866) 241; Kurz in Journ. Asiat. Soc. Beng. XLVI (1877) 88 & For. Fl. Burma I (1877) 523; Koehne in Engl. Jahrb. IV (1883) 32 & Engl. Pflanzenr. 17 = IV. 216 (1903) 264; Gagnep. in Fl. Indoch. II (1921) 954; Craib, Fl. Siam. Enum. I (1931) 724. — **Fig. 43.**

*L. tomentosa* Presl. var. *loudonii* Clarke in Hook. f., Fl. Brit. Ind. II (1879) 578.

*L. rottleri* Clarke in op. cit. II (1879) 576; Koehne op. cit. (1883) 22 et (1903) 263; Gamble, Fl. Madras I, 3 (1919) 513.

Tree. *Leaves* oblong or elliptic-oblong, sometimes sub-orbicular, variable in length 4–20 cm long, 3.5–8 cm broad, paler beneath, acute or sub-rounded at apex, often mucronate, acute or rounded and even subcordate at base, densely yellow stellately tomentose on both surfaces when young, later glabrous above with a tomentulose midrib, and tomentose beneath, 6–12 nerved on each side; petiole 2–5 mm long. *Panicle* subpyramidal, terminal or axillary, 10–30 cm long, 8–20 cm broad, deciduous yellow tomentose, bracteate and bracteolate. *Flower bud* subglobose long attenuate towards the base, 7–12 mm long (including  $\pm$  3 mm long pedicelliform base), 5–8 mm in diam., obscurely ridged, curved above, shortly nipped at apex. *Calyx* in flower about 10 mm long (including  $\pm$  5 mm long base), 7 mm in diam.; lobes 6–8, acute,  $\pm$  6 mm long, patent or reflexed, whitish yellow tomentose in the superior half within. *Petal* obovate, slightly narrowed to the top and the base about 25 mm long (including  $\pm$  4 mm long claw),  $\pm$  18 mm broad, undulate and fringed in the margin. *Stamens* many, subequal, 5–8 thicker and longer than stamens. *Ovary* subglobose with densely whitish yellow tomentose, style long, slender. *Fruiting calyx* cup-shaped, about 10 mm long ( $\pm$  4 mm long base), 9 mm in diam., tomentulose, slightly ridged; lobes usually patent or slightly curved upwards at the tip, often glabrous inside, 5–6 mm long. *Capsule* varying in size 12–20 mm long, 9–15 mm in diam., elliptic or oblong, almost glabrous or sparsely tomentulose, 4–6 valved.

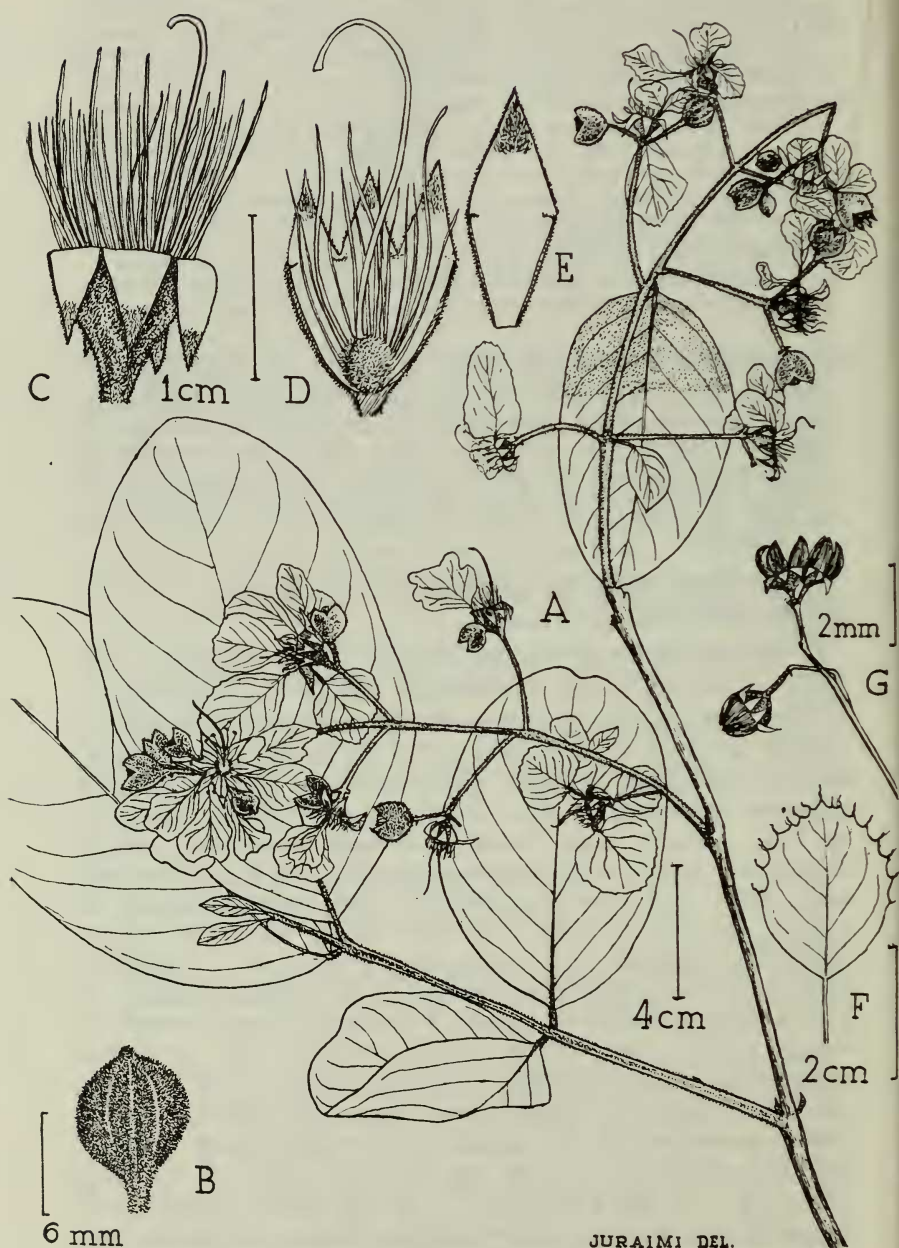


Fig. 43. *L. loudonii* Teysm. et Binn. (A-G: Alston 17,075 in PNH).

A, Fertile twig. B, Flower bud. C, Flower. D, Longitudinal section of flower. E, Lobe to show inside. F, Petal. G, Twig with capsules.

THAILAND: *Central*: **Nakhon Sawan Prov.**, (King 5,420: GH & UC). **Saraburi Prov.**, (Dee 4 = BKF 1,217: BKF); Chibadan (Kerr 8,030: BM & UC). **Petchaburi Prov.**, (Marcan 622: BM). **Prachuabkirikhan Prov.**, Hui Wa Toon (Winit 662: BKF); Kaw Lak (Hamid 3,795: SING); Kao Tao (Marcan 2,458: BM); Huay Yang (Kerr 10,879: BM & E); Limestone hill (Put 233: E). *North-Eastern*: **Chiapum Prov.**, King Ban Zang (Kerr 20,190: BM). **Nakornracha-sima Prov. (Korat)**, (Smitinand 2,501: BKF); Ban Chun Seng (Put 2,838: BM & E). **Burirum Prov.**, Nang Rong (Suksakorn 940: BKF). *Eastern*: **Prachinburi Prov.**, Krabin, Kao Sakan (Kerr 9,755: SING). **Cholburi Prov.**, (Din 175 = BKF 8,346: BKF & 232 = BKF 7,107: BKF; Chit 259 = BKF 14,363: BKF, 259 = BKF 7,079: BKF; Sriracha (Kerr s.n.: BM & 2,082: E; Collins s.n.: E; Marcand 122: BM; Din 175 = BKF 8,346: KEP); Nong Nam Kio (Collins 961: E). **Chonburi Prov.**, (Dee 1,144 = BKF 21,153: SING, & BS 648 = BKF 18,243: SING); Pong Nam Rawn (Smitinand 3,376 = BKF 15,646: SING). Prov. & loc. incert (Haase s.n.: BM, Kerr s.n.: BM; Bradley 219: UC).

INDOCHINA: **Laos**, Strung-Streng (Thorel 2,181: A, E & GH). **Cambodia**, Prov. Pen-Lovier et Samrong-tong (Pierre 503: A).

CULTIVATED: **Thailand**, Bangkok, (Kerr 6,769: BM; Charoon, Thai For. Dept. No. 146,650: BKF). **Malaysia**, Penang Hort. Bot. (Abdul Kadin s.n.: SING; Uppaveé s.n.: SING; Kamarudin 295: SING). **Singapore** Hort. Bot. (Mazuki s.n.: SING; Furtado 34,895: PNH & SING). **Indonesia**, Hort. Bot. Bogor (Alston 17,075: BM & PNH; Beumee' VII. D. 31: SING; Wit s.n.: PNH & SING). **Philippines**, Mt. Makiling, Laguna Prov. (Mendoza 7,708: A, Sulit 81,715: SING).

*L. rottleri* has been correctly reduced by Craib to *L. loudonii*, and certainly this is not native of the Deccan in India. It must have been a cultivated plant.

Fruiting specimens of *L. loudonii* and *L. tomentosa* might also be easily confused since both these have forms which produce large and small fruits. However in *L. loudonii* fruiting calyx is saucer-shaped, its ridges often almost obscure, and lobes 5–6 mm long and capsule normally subglobose, upto 17 mm long, 14 mm in diam. Leaves also are generally acute or mucronate. In *L. tomentosa* the leaves are acuminate, fruiting calyx cup-shaped, ridges generally prominent, its lobes about 3 mm long, and capsule elongate 10–15 mm long, 8–10 mm in diam.

The holotype was collected by Teysmann on a hill at Petchaburi or Phetburi near Kanburi Province of Siam. Apparently from the seed of this type specimen plants were grown in the Bogor Gardens. There are plants in Bogor numbered VII. D. 31, XV, JA XIII and others. In 1941 De Wit distributed as type specimens from one of these plants growing in the private garden of the Hortulanus House.



43. *Lagerstroemia calyculata* Kurz in Journ. As. Soc. Beng., XLI. 2, (1872) 307 & For. Fl. Burma I (1877) 522; Clarke in Hookf., Fl. Brit. Ind. II (1879) 576; Koehne in Engler, Pflanzenr., 17 = IV. 216 (1903) 257; Brandis in Ind. Trees (1911) 339; Gagnep in Fl. Indoch. II (1921) 959; Craib, Fl. Siam. Enum. I (1931) 719. — **Fig. 44.**

*L. angustifolia*, Pierre ex Laness., Pl. Util. Col. Fr., (1886) 322 et Koehne in Engl. Jahrb. XLI (1907) 102 — nom. nud.; ex Gagnep. in Not. Syst. III p. 355 (1918); Fl. Indoch. II (1921) 956, fig. 103.

A tree. *Leaves* 10–20 cm long, 2–8 cm broad, lanceolate, long acuminate or acute at the apex, obtuse or rounded at base, entire or slightly undulate in the margin, hairy brown on both sides when young, later excepting glabrescent midrib, glabrous above, hairy beneath, 8–16 nerved on each side, reticulation more prominent beneath; petiole 5–10 mm long, ferruginous hairy. *Panicle* brown tomentose in axis, 10–30 cm long with oblique or nearly horizontal branchlets; bearing sessile or subsessile flowers. *Flower bud* pyriform 4–5 mm long, 3 mm in diam., slightly nipped at apex. *Calyx* in flower, funnel shaped,  $\pm$  6 mm long,  $\pm$  4 mm broad, brown tomentose, obscurely 12 ridged; lobes 6 erect, not thickened in the margin. *Petal* obovate but acute at apex, 5–8 mm long (including 2–3 mm long claw),  $\pm$  5 mm broad, undulate in margin. *Stamens* many, subequal, exert. *Ovary* oblong, slight tomentose. *Fruiting calyx*  $\pm$  6 cm long,  $\pm$  6 cm in diam., not ridged, adpressed to the fruit; lobes 6, patent or reflexed, brittle. *Capsule* about 10 mm long, 6 mm in diam., oblong, black, 5–6 valved.

BURMA: **Yamethin**, Mintyin (Lace 4,524: CAL & E); Yanaungmyin (Smales s.n.: A, CAL & E). **Pegu** (Kurz 1,344/6: CAL); loc. incert. (Mg Kha No. 1: E).

THAILAND: **Northern:** **Mae Hong Sorn Prov.**, Muang Pai (Kerr 5,505: BM & E); Pang-Mu (Smitinand 4,612: BKF). **Lampoon Prov.**, Mae Lee (Winit 191: BM & E). **Lampang Prov.**, Ngao, Ban Pong (Bunnak 74 = BKF: 9,841: KEP & SING). **Prae Prov.**, Mae Yom (Swat 9 = 2,518: A & SING; Vanpruk 198: BKF); Pang Pui (Kerr 3,616: E). **Kampang Pet Prov.** (Kerr 5,967: BM, E, PNH & UC & Thaew BKF 8,761: BKF). **South-Western:** **Kanburi Prov.**, Kawe Noi River at Wang ka (Kostermans 82: A, PNH & SING). **Eastern:** **Ubol Prov.** (Rananand 17 = BKF 11,895: SING). **Srisaket Prov.**, Kantralak (Prayad 271: SING). **North-Eastern:** **Korat Prov.** = Rachasima (Pong 32 = BKF 22,897: SING & Phengkklai 565: BKF — 28,672: BKF). **Loei Prov.**, (Din 121 = BKF 5,306: SING). **Nong Khai Prov.** Phonpisai (Adisai 433: SING). **South-Eastern:** **Cholburi Prov.**, loc. incert. (Din 236 = BKF 8,328: SING & 179 = BKF 8,347: BKF & KEP); Sriracha, Kaw Loi (Collins 392: E). **Chanburi Prov.**, Pong Nam Rawn (Smitinand 3,345 = BKF 8,347: BKF & 3,375 = BKF 14,714: SING); Chantabun (Noe 62: E). **Southern:** **Surattani Prov.**, Ban Kawp Kep (Kerr 13,341: E). **Trang** (Vanpruk 811 = Flor. Siam. No. 5,378: BKF).



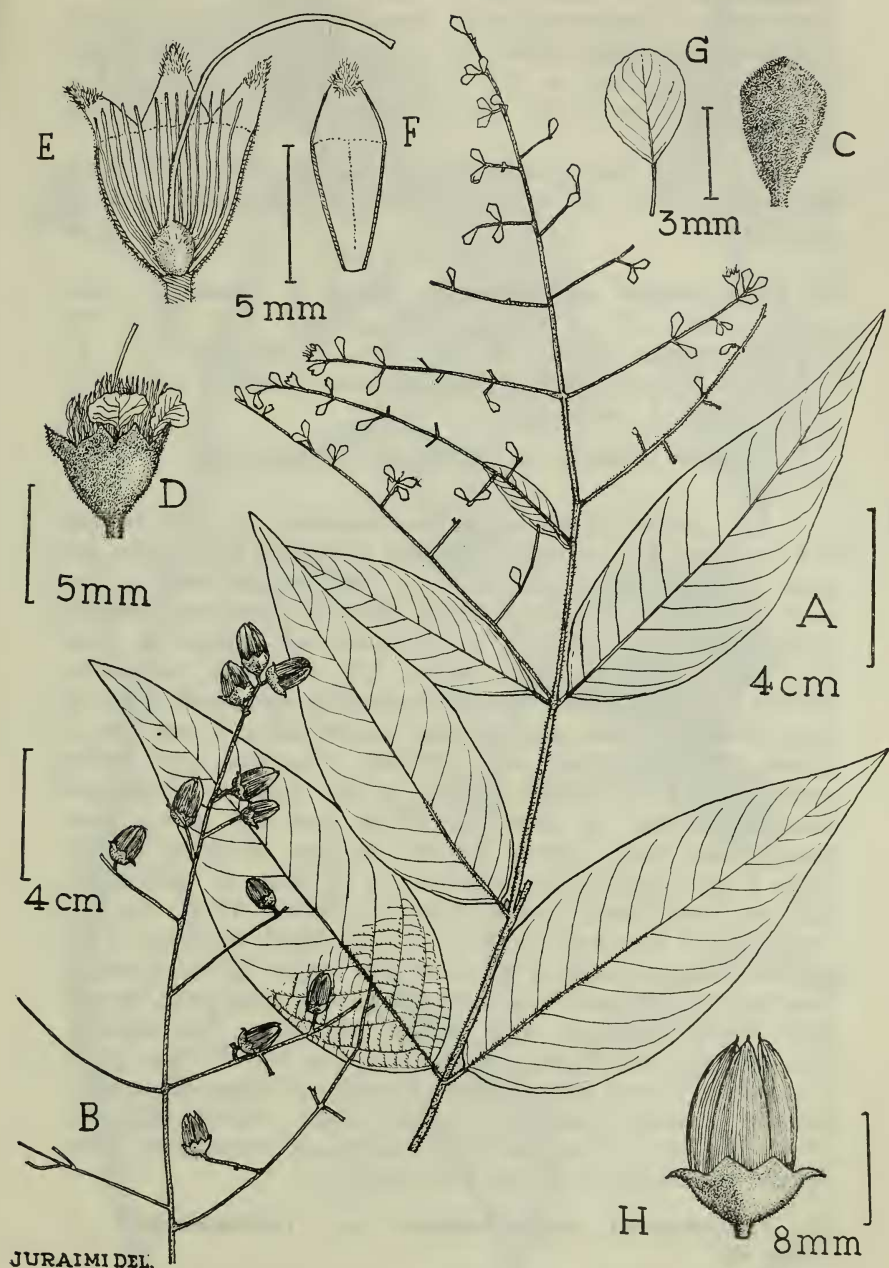


Fig. 44. *L. calyculata* Kurz (A-H: Swat 2,518 in SING).

A, Fertile twig. B, Twig with capsules. C, Flower bud. D, Flower.  
E, Longitudinal section of flower. F, Lobe to show inside. G, Petal.  
H, Capsule.

INDOCHINA: **Anam**, Dalat (Squires 820: A. BM & SING). **Cochinchina**, Prov. Bien Hoa at Bao Chiang (Pierre 4,993: A. BM & GH — isosyntypes of *L. angustifolia*). Tayninh at Souida (Pierre 4,993; perhaps 4,994: A — isosyntypes of *L. angustifolia*); Thanh-uyen (Robert 14: A. E & UC). **Laos**, Borikhane near Weing Chan (Kerr 21,305: BM). **Cambodia**, loc. incert. (Bejeaud 698: A).

This is easily distinguished by its sessile or subsessile flowers. Gagnepain (1921) placed *L. calyculata* as insufficiently known species.

44. **Lagerstroemia cochinchinensis** Pierre in Lanessan, Plant. Util. (1886) 321 et Koehne, Engl. Jahrb. XLI (1907) 102 *nom. nudum*; Gagnep. in Not. Syst. III (1918) 356 et Fl. Indoch. II (1921) 956; Craib, Fl. Siam. Enum. I (1931) 719 sub observ. *L. balansae*.

*L. balansae* Koehne *sec.* Craib, Fl. Enum. Siam. I (1931) 718 p.p.

A tree. *Leaves* elliptic or narrow-lanceolate, or ovate oblong, 5–9 cm long, 2.5 cm broad, greenish brown or grey above and paler beneath, stellate tomentose on both surfaces when young, later glabrous or glabrescent above, hairy or glabrescent beneath, shortly acuminate or acute at the apex, sub-rounded at base, 6–9 nerved on each side; petiole 2–5 mm long, tomentose. *Panicle* terminal, densely ferruginous stellate tomentose, 8–15 cm long; branchlets stout and unequal; pedicel about 5 mm long in lateral flowers. *Flower bud* pyriform, obconical and almost truncate at first, shortly nipped at tip, thickly ferruginous tomentose. *Calyx* in flower, obconical, narrowed into a short pedicelliform base, usually smooth or very obscurely ridged; lobes 4 mm long, yellow tomentose in the superior half within, glabrous lower down. *Petal* orbicular or obovate, 15–20 mm long (with 3.5–5.0 mm long claw), 8–13 mm broad, undulate in the margin. *Stamens* many, 4–6 thicker and longer, others subequal, inserted at the bottom of the calyx tube. *Ovary* subglobose, densely light yellow tomentose; style slender and longer than stamens. *Fruiting calyx* cup-shaped, abruptly narrowed into the base, about 6 mm deep, 12 mm broad, densely ferruginous tomentose outside; lobes 6, reflexed triangular. *Capsule* short, oblong or ovoid, 15–17 mm long, 12 mm in diam., deciduous tomentulose, often densely tomentose at the tip, 6–7 valved.

- 44a. **Lagerstroemia cochinchinensis** var. **cochinchinensis** —  
Fig. 45.

Leaves elliptic or narrow lanceolate, acute or acuminate at apex, more or less rounded at base, dark brown or grey and glabrous above, lighter and hairy beneath, 5–7 cm long, 2.5–3 cm broad; petiole 2–3 mm long (in the lectotype) and up to 5 mm in the other.

INDOCHINA: *Cochinchina*: Tayninh at Souida, cult. in Hort. Bot. Saigon (Pierre 820: BM — **isolectotype**).

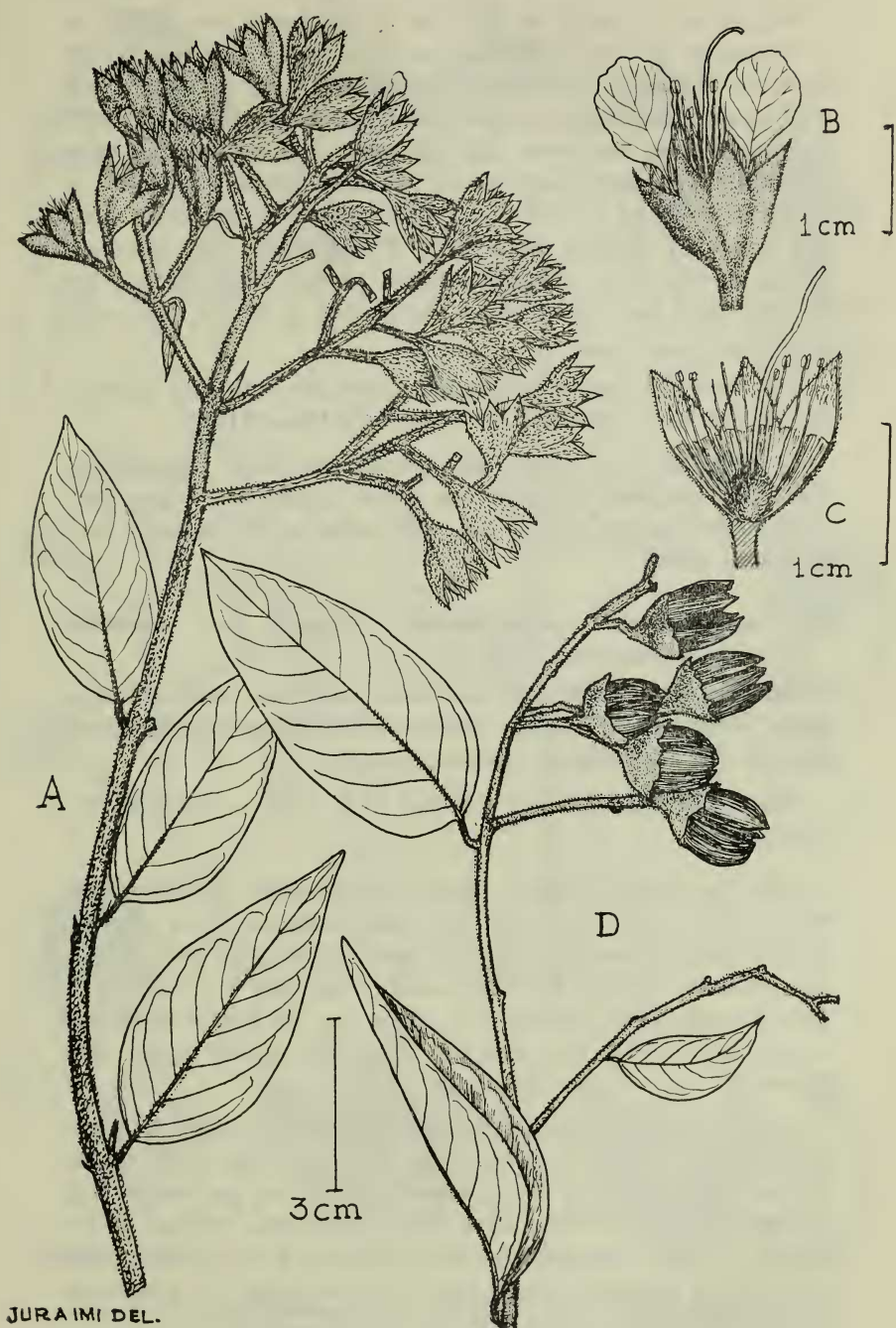


Fig. 45. *L. cochinchinensis* var. *cochinchinensis* (Cult. in Bot. Saigon 820 in BM-isolectotype; D: Winit 515 in BKF).

A, Fertile twig. B, Flower. C, Longitudinal section of flower. D, Twig with capsule.

THAILAND: *Central*: Nakawn-Chaisee (Winit 515: BKF).

We are very grateful to Mlle. M. F. Capitaine for sending us a photocopy of the lectoholotype from the herbarium of the Museum National D'Histoire Naturelle of Paris. It agrees well with its duplicate in the British Museum though differing in that the leaves here are loose and the main inflorescence is more branched and bears open flowers. Mlle. Capitaine also sent us a line drawing of a young bud which shows a depressed apex and a similar drawing of a fruit. Young buds with depressed apices are also seen in the specimens of var. *ovalifolia* and the fruiting calyx has lobes which shows that it has a very short nipple to flower bud.

The lectotype specimen and its duplicate bear only flowers; and so we have described the fruit from Winit 515.

*L. balansae* with which this species has been confused by Craib has narrower and glabrous leaves (adult) and flower buds with longer nipples so that the calyx lobes of the capsules have elongated apices.

44b. *Lagerstroemia cochinchinensis* Gagnep. var. *ovalifolia* Furtado et Montien — Fig. 46.

Differt a var. *cochinchinensis* foliis latioribus ovato-oblongis, supra virido-griseis, subtus glabrescentibus luteo-viridescentibus, tomento stellato ochraceo deciduo praeditis.

**Holotypus:** THAILAND: Kanburi (P.S. 2,101 = BKF 28,791: SING).

*Folia* late ovato elliptica, apice subacuminata vel acuta, basi subrotundata, 6–9 cm longa, cm lata, utrinsecus 7–11 nervata, supra glabra griseo-viridia, subtus luteo-viridescentia glabrescentia cum tomento deciduo ochraceo stellato; petiolus 3–5 cm longus. *Inflorescentia* 6–10 cm longa, in ramos 3–6 cm longos subdivisa. *Alabastrum* 10–12 mm longum, 7–8 mm latum, apice cum mamnillo circa 1 mm longo.

*Leaves* broadly ovate elliptic, subacuminate or acute at apex, subrounded at base, 6–9 cm long, 3–6 cm wide, 7–11 nerved on each side, glabrous and greenish grey above, glabrescent and yellowish green beneath often with ochraceous stellate hairs; petiole 3–5 mm long. *Inflorescence* terminal, 6–10 cm long, with 3–6 cm long branches. *Flower bud* 10–12 mm long, 7–8 mm broad with a nipple about 1 mm long.

THAILAND: *Northern*: **Chiengmai**, Doi-Sutep (Kerr 718: BM). *South-Western*: **Kanburi** (P.S. 2,101 = BKF 28,791: SING — **holotype**); Ta-Salao (Marcan 2,511: BM; Kerr 19,490: BM).

INDOCHINA: **Laos**, Pakse (Jeffrey 5,104: UC).



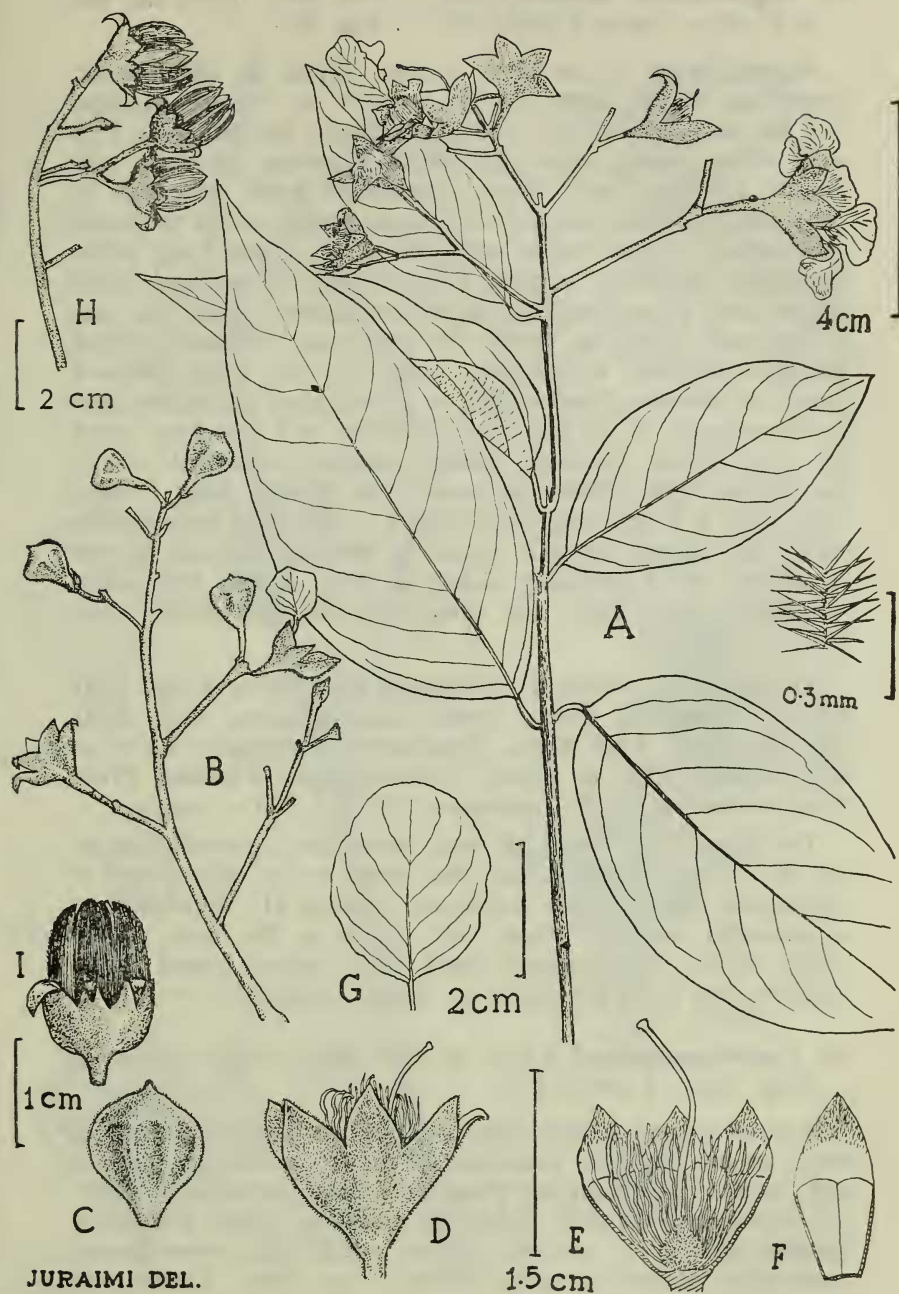


Fig. 46. *L. cochinchinensis* var. *ovalifolia* (A-G: Smitinand 28,791 in SING — holotype; Jeffrey 5,104 in UC).

A, Fertile twig. B, Twig with flower buds and flowers. C, Flower bud. D, Flower. E, Longitudinal section of flower. F, lobe shows inside. G, Petal. H, twig with capsules. I, Capsule.

45. **Lagerstroemia collinsae** Craib in Kew Bull. (1914) 282 and in Fl. Siam. Enum. I (1931) 720. — **Fig. 47.**

A tree about 15 m high. *Leaves* elliptic or ovate-elliptic, acuminate at the apex, nearly rounded or cuneate at base, 4–8 cm long, 1.5–3.5 cm broad, deciduously tomentose on both sides when young, later glabrous, 6–9 nerved on each side; petiole 3–8 mm long. *Panicle*, terminal, borne generally on congested branchlets, about 5 cm on each branch, yellow tomentose with axillary cymes; bracts small, linear,  $\pm$  7 mm long, yellow tomentose, deciduous; pedicels 5–7 mm long. *Flower buds* about 9 mm long, 8 mm broad ochraceous tomentose; nipple less than 1 mm long. *Calyx* in flower 7–9 mm long, obscurely ridged, abruptly narrowed into a short base (2–3 mm long); lobes 6, patent or recurved. *Petals* oblong or sub-rounded, purple, undulate in the margin,  $\pm$  16 mm long (including 4–5 mm long claw), 10 mm broad. *Stamens* many, exserted, subequal. *Ovary* subglobose, light yellow tomentose; style slender, long. *Fruiting calyx* tube 6–8 mm long (including  $\pm$  3 mm long pedicelliform base), cup shaped, lobes 6, patent or reflexed. *Capsule* globose or oblong, 10–14 mm long, 10 mm in diam., usually light brown tomentose at the apex, and sometimes also tomentulose lower down, 5–6 valved.

THAILAND: *Northern*: **Petchabun Prov.** (Kerr 6,378: BM). *Central*: **Saraburi Prov.**, Muok Lek (Marcan 813: BM). *North-Eastern*: **Loei Prov.**, Phukrading (Smitinand 2,142 = BKF 9,628: KEP & SING). *South-Eastern*: **Cholburi Prov.**, Sriracha (Collins 38: E — **syntype** & 190: E & BM — **syntypes**).

The flowers are borne on small branchlets crowded together on the top of a branch and this seems to be easiest way to distinguish the species in herbarium. Marcan 813 is taken from a cultivated tree in "Muok Lek" which is the name of the Public Park; this specimen bears larger leaves having larger petioles. The fruits are borne on leafless branchlets.

46. **Lagerstroemia noei** Craib in Kew Bull. (1930) 327 et Fl. Siam. Enum. I (1931) 725.

A shrub about 1 m high. *Leaves* 5.0–7.5 cm long, 2–4 cm broad, ovate or ovate-elliptic, acuminate at apex, gradually cuneate or sub-rounded at base, slightly glabrescent along the midrib beneath, 4–7 nerved on each side; petiole 2–3 mm long, yellow tomentose. *Panicle* terminal 3.0 cm long, 2.5 cm broad, light brown stellate tomentose; pedicel in lateral flower 5 mm long. *Flower bud* turbinate, narrowed abruptly into a 2 mm long, pedicelliform base, light brown or yellowish, stellate-tomentose, apiculate with about 2 mm long nipple. *Calyx* in flower obconical, obscurely ridged, light yellow tomentose in the superior half within; lobes 6, 5–7 mm long. *Petals* suborbicular, 12–15 mm long (including  $\pm$  5 mm long claw),  $\pm$  11 mm broad, undulate in the margin. *Stamens* many, subequal. *Ovary* pilose, surmounted with a long slender filament.

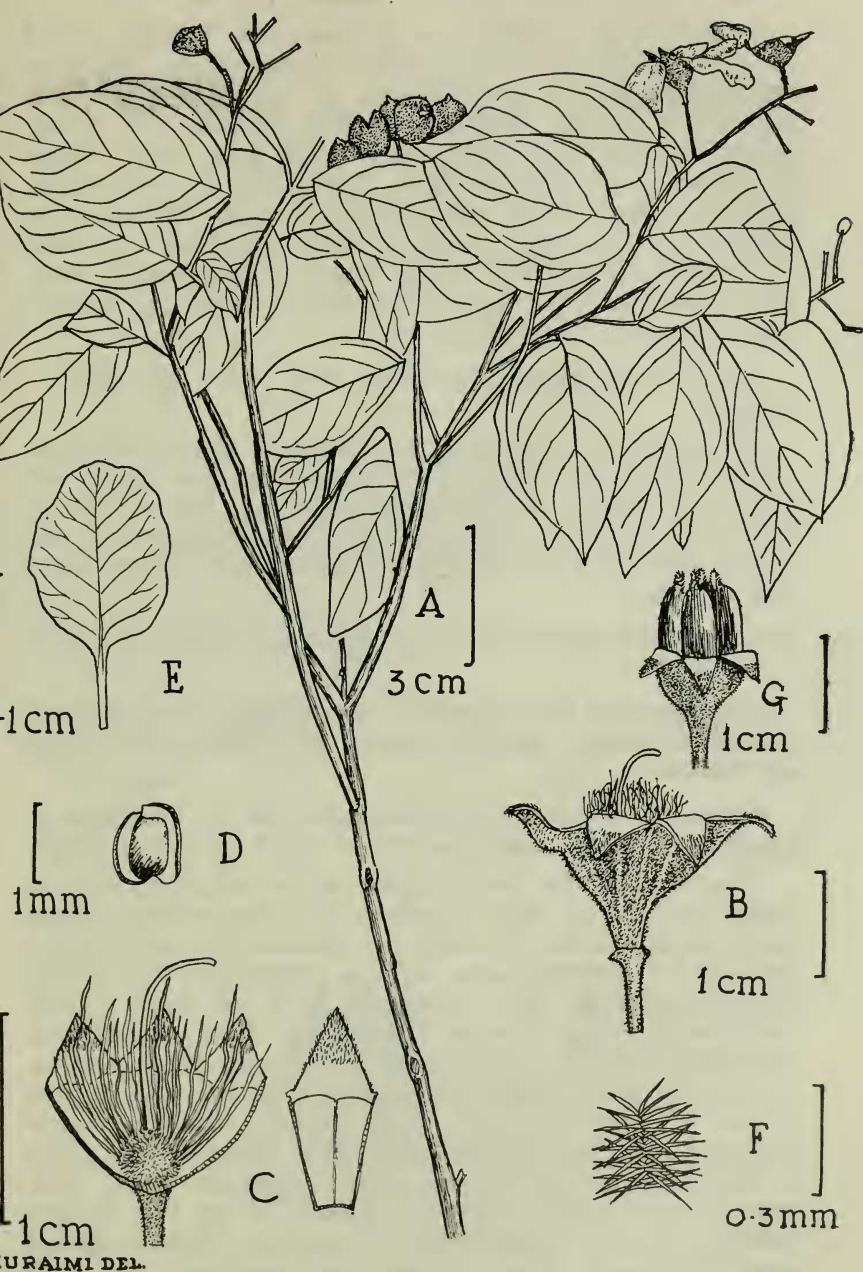


Fig. 47. *L. collinsae* Craib. (A-F: Collins 190 in E — syntype G: Smitinand 2,142 in SING).

A, Fertile twig. B, Flower. C, Longitudinal section of flower. D, Anther. E, Petal. F, Hair. G, Capsule.



- 46a. *Lagerstroemia noei* Craib in Kew Bull. (1930) 327 & in Fl. Siam. Enum. I (1931) 725. var. *noei* — Fig. 48.

A shrub about 1 m high. *Leaves* green, paler beneath, 2.5–7.5 cm long, 1.5–3.6 cm broad, elliptic or ovate-elliptic, acuminate or subacuminate at apex, obtuse or sub-rounded at base, glabrous or slightly stellate puberulous beneath, 4–9 nerved, petiole 2–3 mm long. *Panicle* short 3 cm long, brown stellate tomentose. *Flower bud* turbinate, 10 mm long, 8–9 mm broad, obscurely ridged, brown with stellate tomentum, apiculate with about 2 mm long nipple. *Calyx* in flower obconical, tube about 8 mm deep, 8 mm broad, slightly ridged at base; lobes 6, erect, paler tomentose in the superior half within, 5 mm long. *Stamens* many, subequal. *Ovary* tomentose.

THAILAND: **Korat**, Ban Chum Seng (Noe 246: BM — **holotype**).

This appears to represent an early flowering stage of the plant. Further studies are necessary to see whether this species will grow and become var. *longifolia* which has similar flowers. Sometimes the sepals remain united to give the appearance of 5 as described in the protologue and as seen in the above quoted type specimen.

- 46b. *Lagerstroemia noei* Craib var. *longifolia* Furtado et Montien — Fig. 49.

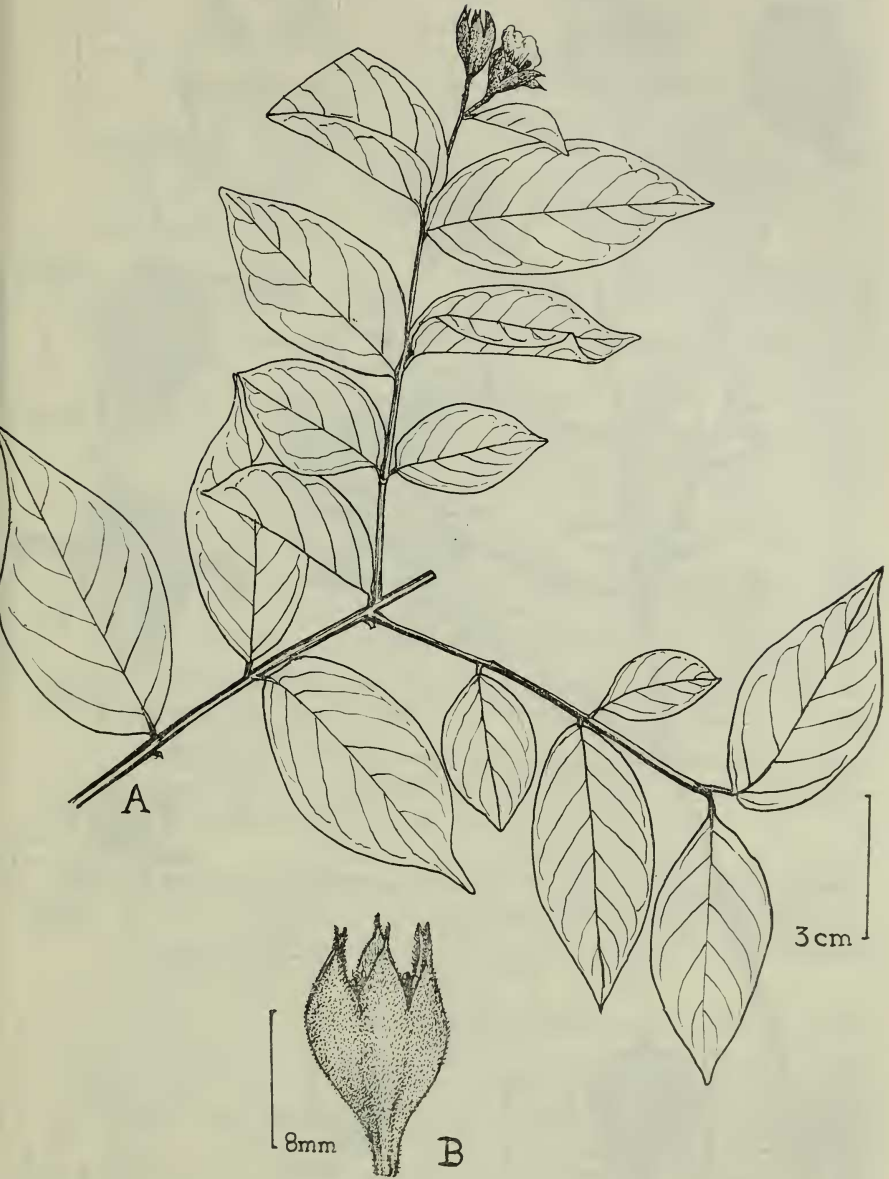
*L. noei* var *noei* foliis majoribus fusco brunneis, glabris paniculis longioribus ramosis, floribus longiore pedicellatis haec varietas sat distincta.

**Holotypus:** THAILAND: In Provincia Loei ad Wangsaphung prope flumen Huay Som (Dee 707 = BKF n. 12,388: SING).

*Arbor* 5–10 m alta. *Folia* elliptica vel ovato-elliptica, 5–15 cm longa, 2–4 cm lata, apice acuminate vel subacuminata, obtusa, basin versus curvato angustata vel subrotundata, imo obtusa, utrinque 7–11 nervata, primo utrinque glabrescentia dein glabra. *Panicula* terminalis, saepe pyramidalis, 7–20 cm longa, ramosa basin versus saepe breviter foliata axi fusco tomentulosa; pedunculis circa 0.5–3 cm et pedicellis 0.5–2 cm longis praedita. *Alabastrum*, fulvo tomentosum, obscure costatum, circa 10 mm longum, 7 mm in diam., basin versus cuneatum, apice rotundato-convexum, summo circa 7 mm mammillatum. *Calyx* 6 lobatus, lobis intus apicem versus tomentosus. *Petala* (cum unguiculo circa 5 mm longo) 12–15 longa, 11 mm lata, margine undulata. *Ovarium* subglobosum, tomentosum. *Capsula* oblonga circa 17 mm longa, 12 mm in diam. apice tomentosa.

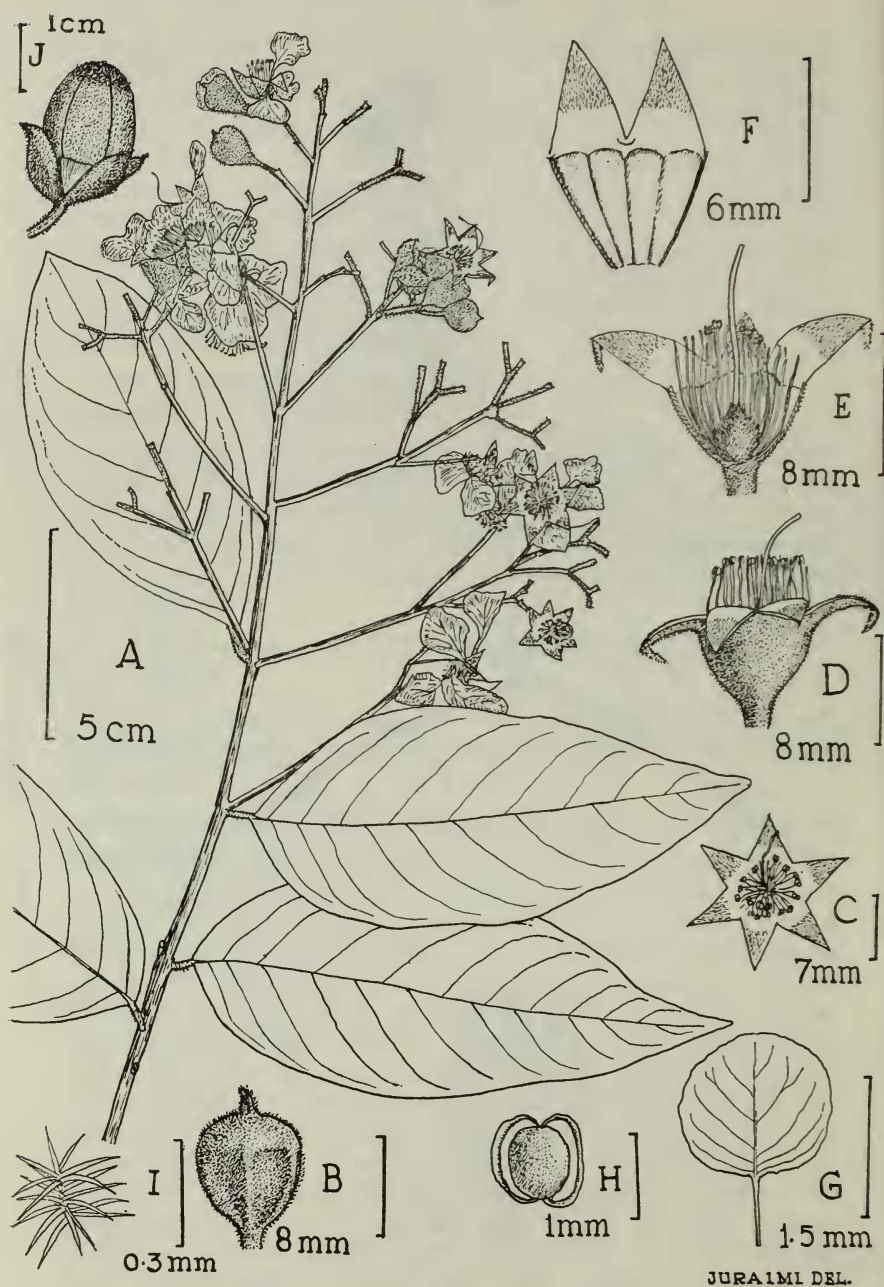
A tree 5–10 m or more tall. *Leaves* dark brown, paler beneath, elliptic or ovate elliptic 5–15 cm long, 2–4 cm broad, acuminate or subacuminate at apex, sub-rounded at base, eventually glabrous on both sides, 7–11 nerved on each side; petiole 4–7 mm long. *Panicle* terminal, often pyramidal, 7–20 cm long, tomentulose in the axis; peduncles distant once or twice dichotomous, up to 3 cm long, pedicel up to 2 cm long in lateral flowers. *Flower bud*





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Fig. 48. *L. noi* var. *noi* (A-B: Noe 246 in BM — holotype).  
A, Fertile twig. B, Flower.



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Fig. 49. *L. noei* var. *longifolia* Furtado et Montien (A-I: Dec 707 = BKF 12,388 in SING holotype J: Smitinand 4,813 in BKF).

A, Fertile twig. B, Flower bud with long nipple at the apex. C-D, Flower. E, Longitudinal section of flower. F, Lobes to show inside. G, Petal. H, Anther. I, Hair. J, Capsule.

turbinate 10 mm long,  $\pm$  7 mm broad, slightly ridged, fulvous stellate tomentose; nipple  $\pm$  2 mm long at apex. *Calyx* in flower tube 8 mm deep, 8 mm in diam., obconical, slightly 12 ridged; lobes 6, light brown tomentose in the superior half within. *Petal* sub-rounded, 12–15 mm long (including  $\pm$  5 mm long claw),  $\pm$  11 mm broad, undulate in the margin. *Stamens* many, subequal. *Ovary* subglobose, densely light yellow tomentose. *Fruiting calyx* cup-shaped, 8–10 mm long (including  $\pm$  2–3 mm long base),  $\pm$  12 mm in diam., abruptly narrowed into the base, lobes 6, recurved. *Capsule* oblong, about 17 mm long, 12 mm wide, tomentose at apex.

THAILAND: *Northern*: **Chiangmai**, Doi Sutep (Smitinand 4,184: BKF); Chiang Mai to Chiang Rai (Rock, 1554: A & UC; 1,640: A). **Lumpang** (Winit 645: BKF). **Lumpoon** (Luan 6 = BKF 11,207: BKF). **Prae** (Pricha 2 = BKF 1,202: BKF); Ma chwa (Vanpruk 54: BKF). *Central*: Saraburi (Dee 103 = BKF 3,705: BKF); Chaibadan at Dong Pya Yen (Kerr 8,028: BM). *North-Eastern*: **Udon**, Nong-Harn (Lakshnakara 1,039: BM). **Loei**, Wangsaphung (Dee 5 = BKF 8,634: SING, & 707 = BKF 12,388: BKF & KEP — **isoholotypes** & SING — **holotype**; Din 19 = BKF 3,441: BKF); Phu Krading (Thai For. Dept. n. 344 = BKF 2,495: A & BKF); Pha Nok Kao (B.S. 32 = BKF 936: BKF); loc. incert (Dee 918 = BKF 16,149: SING); Nawng Bua, Kwawnkaen (Smitinand 4,813: SING — **type of fruit**).

INDOCHINA: **Tonkin**, Hoa Binh at Cho Bo (Petelot 1,596: A). **Laos**: Mekong Bank (Talbot de Malahide 46: BM & SING).

The holotype of *L. noi* var *noi* was a shrub whereas *L. noi* var. *longifolia* is a tree 5–10 m long. Possibly the var. *longifolia* represents the adult form of var. *noi*.

47. ***Lagerstroemia balansae*** Koehne in Engl. Jahrb. XXIII Beibl. 57 (1897) 35, & in Engl. Pflanzenr. 17 = IV 216 (1903) 263; Gagnep. in Fl. Indoch. II (1921) 957; Craib, Fl. Enum. Siam. I (1931) 718 p.p. — **Fig. 50a, 50b.**

Shrub or tree. *Leaves* elliptic, acuminate or acute at apex, narrowed and acute or sometimes nearly obtuse at base, 7–11 cm long, 2.5–4.5 cm broad, ferruginous tomentose on both sides when young, later glabrous or glabrescent; nerves 7–10 pairs; petiole 4–10 mm long. *Panicle* terminal, thickly ferruginous tomentose, 8–15 cm long, few branched, longest branchlets about 5 cm long, slightly curved upward; pedicel short  $\pm$  4 mm long. *Flower bud* turbinate, slightly ridged with ferruginous tomentose with a brush-like nipple at apex. *Petals* subglobose 15–20 mm long (including 4–6 mm long claw), 14–17 mm broad, undulate in the margin. *Stamens* many, subequal. *Ovary* subglobose, tomentose. *Fruiting calyx* cup-shaped 10–15 mm long, 10 mm in diam., lobes 6, slightly recurved at the top with a short acuminate apex about 1 mm long. *Capsule* ovate, 12 mm long, 10 mm in diam., glabrescent, tomentose at apex, 6 valved.

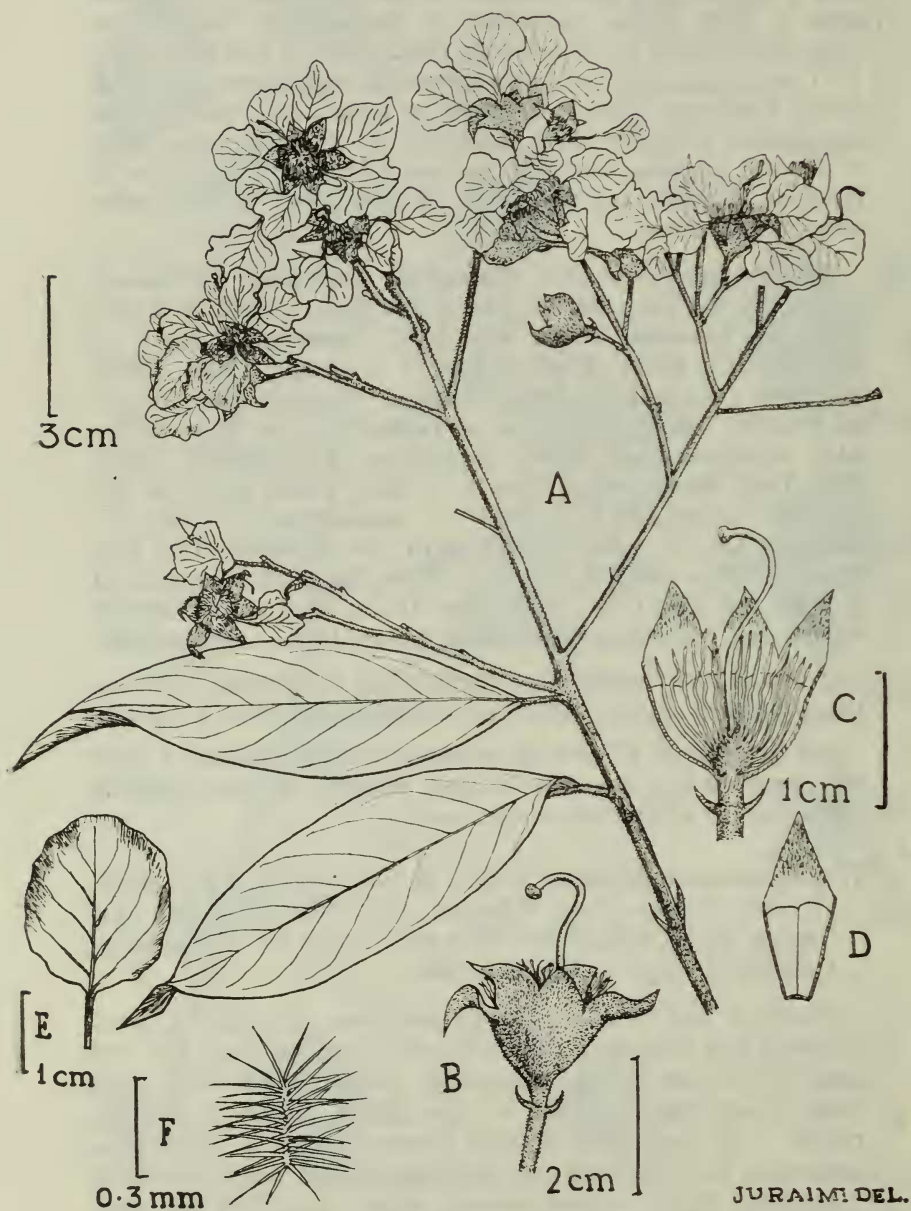


Fig. 50a. *L. balansae* Koehne (Petelot 5,914 in A).

A, Fertile twig. B, Flower. C, Longitudinal section of flower. D, Lobe shows inside. E, Petal. F, Hair.



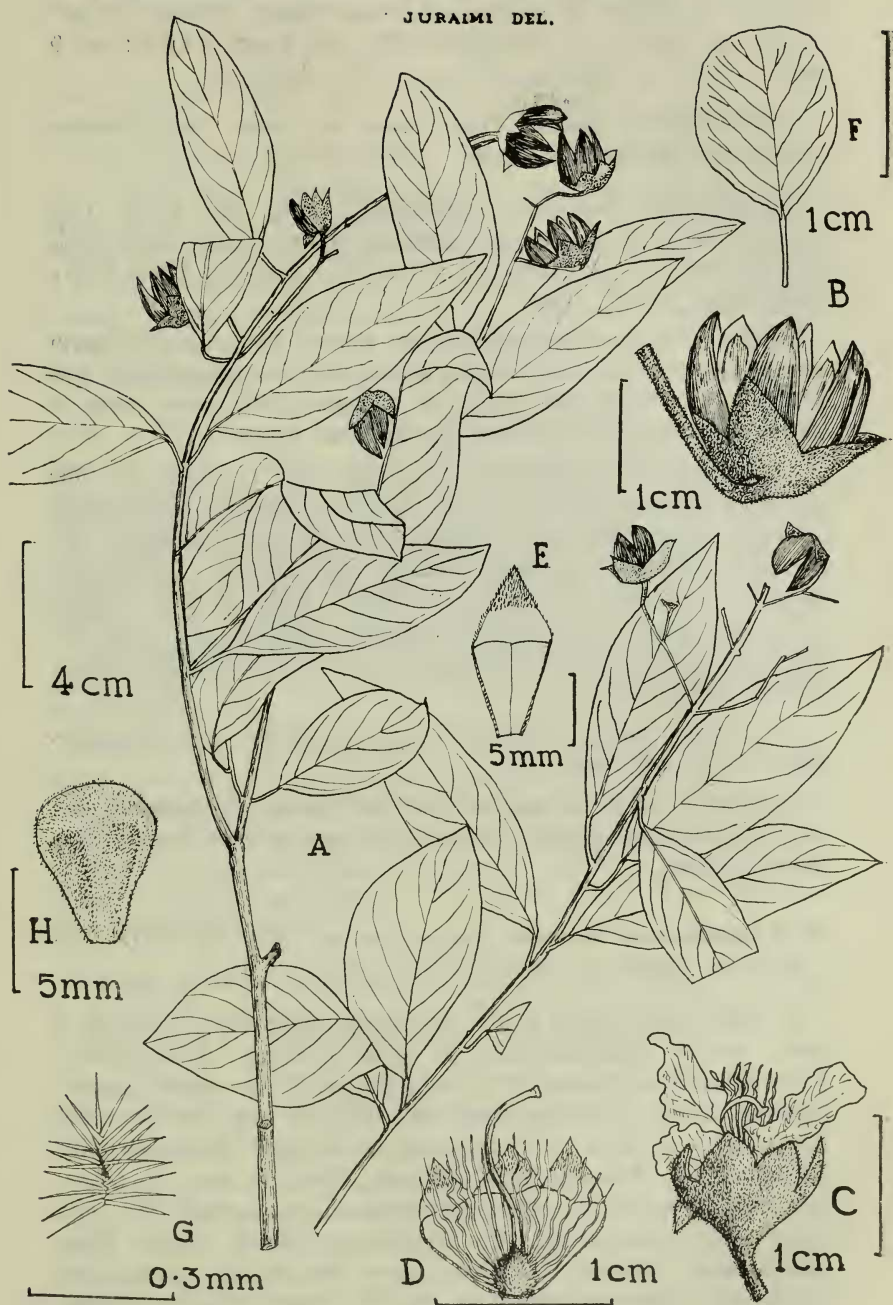


Fig. 50b. *L. balansae* Koehne (A-B: Liang 66,032 in E; C-F: Lau 27,491 in A; Lau 27,241 in A).

A, Twig with capsules. B, Capsule enlarged. C, Flower. D, Longitudinal section of flower. E, Part of calyx to show inside. F, Petal. G, Hair. H, Flower bud.

CHINA: **Hainan**, Ch'ang-Kiang (Lau 1,210: A & BM); Lok Tung (Lau 27,241 & 27,491: A); loc. incert. (Wang 33,163, 33,500 & 33,875: A; McClure 8,325: A; Liang 63,927: A & 66,032: E); Lai (McClure 709 = L.U. 18,243: A).

INDOCHINA: **Sontoy Prov.** route to Notre Dame Rocks, humid plot (Petelot 5,914: A).

THAILAND: Northern: **Chiengmai Prov.**, Me Klang Fall (Prayad 14: SING). *Central*: **Saraburi Prov.**, Khao Sawng-Phi-Nawng (Smitinand & Sleumer 1,359: SING). *Eastern*: **Ubun Prov.**, Chiet (Kerr 21,552: BM).

Petelot 5,914 was collected in the Sontoy Province of Tonkin on the route to the Notre Dame Rocks in a humid spot, the tree being 4–5 m high. The holotype Balansa 3,865 (seen only in photocopy) was also collected in the same region.

The nipple of the flower buds varies from 1–2 mm, but this species is easily separated from *L. noi* by its thicker, ferrugineous coloured indumentum on the buds, long petioled and longer and narrower elliptic, acuminate leaves and smaller, glabrescent capsules. Generally the ridges of flower buds do not become visible because of the thick indumentum, whereas in *L. noi* the buds have thinner indumentum and so the ridges usually become slightly conspicuous.

Apparently young vegetative twigs are winged, but the wings seem to fall off soon.

Gagnepain seems to have referred the fruiting specimens of this to *L. cochinchinensis*. But we have not seen two of the syntypes of this species.

48. **Lagerstroemia lecomtei** Gagnep. in Nat. Syst. III (1918) 360 & in Fl. Indoch. II (1921) 949 fig. 102 — 1 & 2.

A short tree. *Leaves* ovate acuminate, rounded or cordate at base, shortly acuminate-acute at apex, glabrous, concolourous, 7 nerved on each side; 2.5–5.5 cm long, 2–3 cm broad; petiole glabrous, about 1 mm long. *Inflorescence* 5 cm long, few flowered; branchlets 1–2, about 10–15 mm long, shortly yellowish tomentose, 1–2 flowered. *Flower buds* globose, about 8 mm in diam., 5–6 ridged, apiculate, yellow tomentose. *Calyx* sessile, 5–6 mm deep, yellow-tomentose, 10–12 sulcate within, with wings conspicuous, abruptly desinent near the sinus; lobes 5–6, triangular, tomentose above the middle within. *Petals* orbicular, subcordate at base, undulate in the margin. *Stamens* numerous, subequal. *Ovary* tomentose with stellate hairs. *Fruit* not known.

INDOCHINA: **Annam** between Phan-rang & Tourcham (Lecomte et Finet 1,406: P — **holotype**).

We have not seen any representatives of this species.

49. *Lagerstroemia spireana* Gagnep. in Nat. Syst. III (1918) 362 et. in Fl. Ind. II (1921) 951 Ic. 102 fig. 4-6; Craib. Fl. Siam. Enum. I (1931) 726. — **Fig. 51.**

*L. spireana* Gagn. var. *armata* Craib op. cit. (1931) 726 syn. nov.

Type Specimen: INDOCHINA: Laos, Cam-Keut (Spire 326: P).

A tree. *Leaves* oblong-elliptic, 4-12 cm long, 4-5 cm broad, acute or rounded at the apex, slightly cuneate or rounded at the base, glabrous above, tomentose beneath then glabrous; nerves 5-8 pairs, prominent on both surfaces; petiole 2-4 mm long. *Panicle* terminal cylindrical, 20-30 cm long with branches about 5 cm long or less. *Flower bud*, ridged and winged, tomentose with stellate hairs, alternisepalous ridges with appendiced incurved. *Petals* 6, oboval, attenuate at base, wavy margined, 12 mm long (with a 2.5 mm long claw), 8 mm broad. *Stamens* placed at the base of calyx. *Fruiting calyx* 7-9 mm long (including 2-4 mm long pedicelliform base), 10-12 mm in diam., broadly undulated wing from each sinus to the base and also amidst of the lobes but not reached to the apex, not decurrent into the base, lobes 6, reflexed. *Capsule* short oblong, 12-14 mm long, 8-11 mm in diam., slightly short brownish hairy; 6 valved.

THAILAND: *North-Eastern*: Nakawn Panom Prov., Ta Uten (Kerr 8,466: BM); Tat Panom (Kerr 8,423: E — **isoholotype** of var. *armata*).

Differs from *L. siamica* by 5-7 nerved leaves, flower bud being globose and winged, non decurrent at base, wings twice larger at the top and by its stamens arising at the base of the tube.

We have had only poor specimens of these varieties. According to Craib's notes the *armata* bears stout spines on the trunk and is an evergreen plant growing by a creek, whereas the type var. is a deciduous plant.

50. *Lagerstroemia anisoptera* Koehne in Engl. Jahrb. IV (1883) 407 & Engl. Pflanzenr. 17 = IV. 216 (1903) 264 fig. 57B; Gagnep. in Fl. Indoch. II (1921). — **Fig. 52.**

*L. floribunda* Jack sec. King, Mat, Fl. Mal. Pen. III (1898) 351; Ridl. Fl. Mal. Pen. I (1922) 823; Craib, Fl. Siam. Enum. I (1931) 721 omnino pro parte.

A tree  $\pm$  10 m tall. *Leaves* oblong or elliptic-oblong, 10-20 cm long, 4-10 cm broad, obtuse or acute at apex, sub-rounded rarely acute at base, ferruginous stellate-tomentose on both sides when young, later glabrescent or glabrous, 6-11 nerved on each side; petiole 3-5 mm long. *Panicle* ferruginous stellate tomentose, terminal, subpyramidal, 10-35 cm long, 8-25 cm broad; branchlets up to 25 cm long; pedicel unequal  $\pm$  5 mm long in lateral flower. *Flower bud* similarly tomentose, 8-11 mm long (including  $\pm$  3 mm long pedicelliform base), 6-7 mm in diam., turbinate above the base, sub-rounded at the top, brush-like nipple at apex, usually 12 ridged, alternisepalous ridges longer, warted at the sinus outside. *Petal* obovate, gradually cuneate at

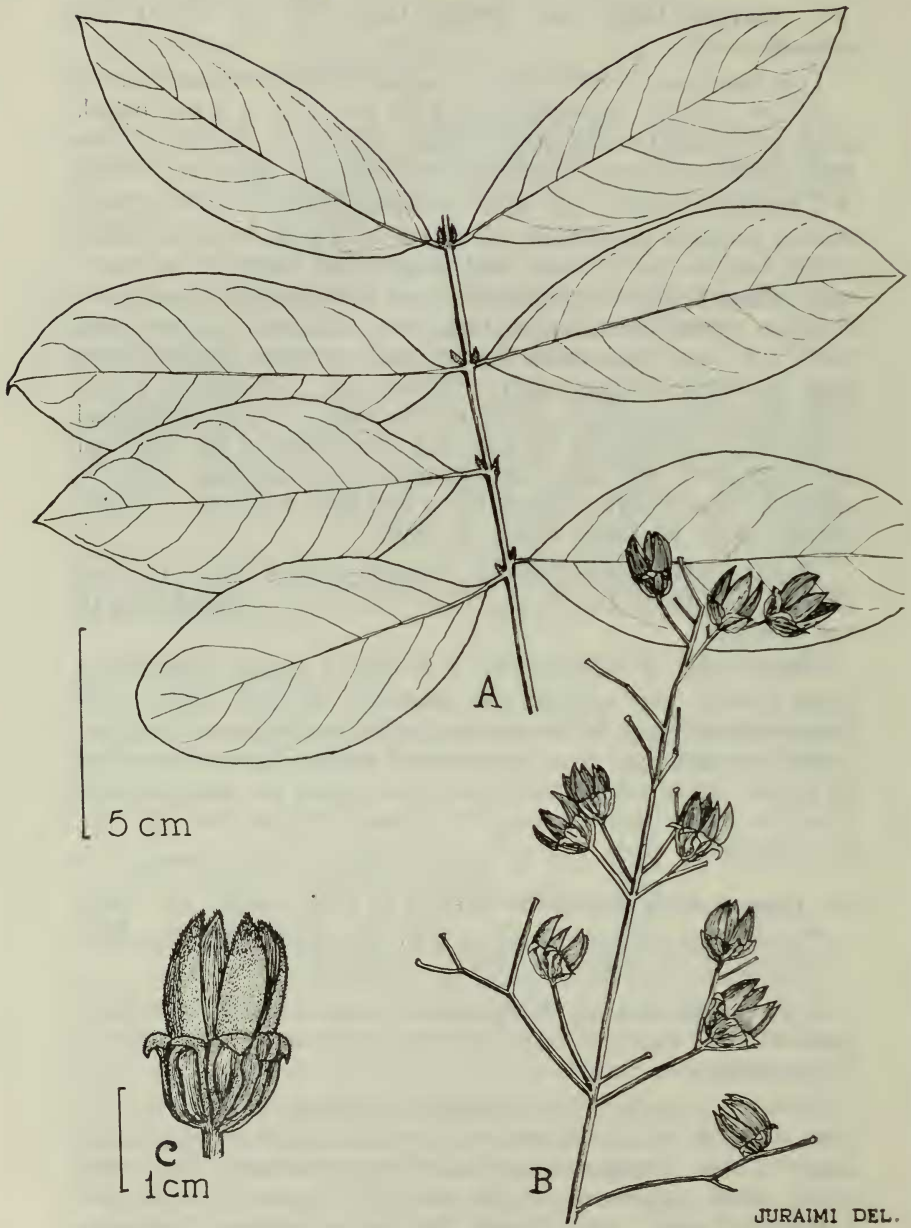


Fig. 51 *L. spireana* Gagnep. (Kerr 8,466 in BM).

A, Twig. B, Twig with capsules. C, Capsule.



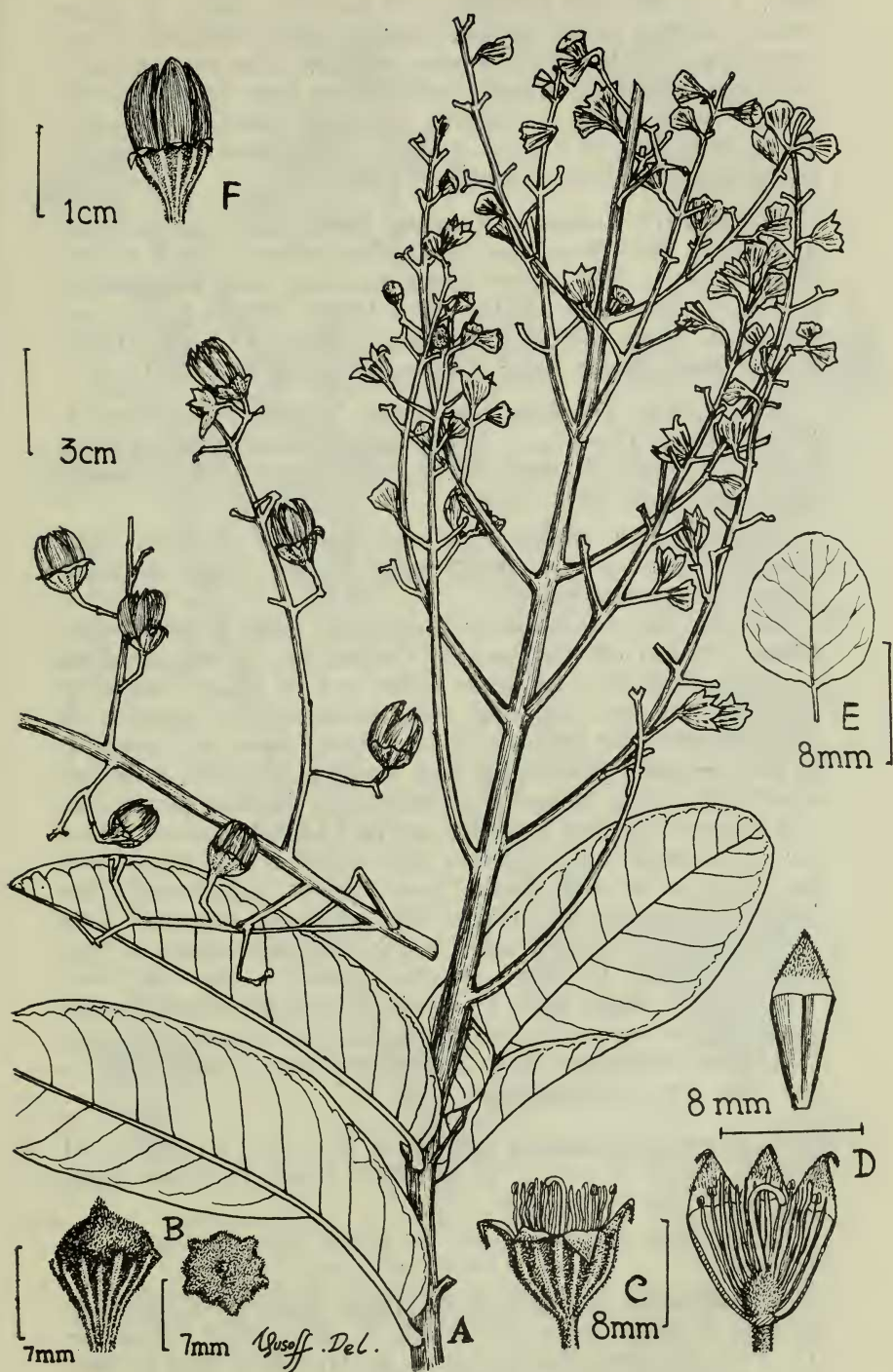


Fig. 52. *L. anisoptera* Koehne (Curtis 2,602 in SING).

A, Fertile twig. B, Flower bud. C, Flower. D, Longitudinal section of flower. E, Petal. F, Capsule.

base,  $\pm$  15 mm long (including 3–4 mm long claw),  $\pm$  8 mm broad, undulate in the margin. *Stamens* many, subequal. *Ovary* subglobose, densely tomentose with yellowish hairs. *Fruiting calyx* cup-shaped above the abruptly pedicelliform base; lobes recurved. *Capsule* short-oblong or slightly narrowed towards the apex, 10–12 mm long, 8–9 mm in diam., glabrescent but densely ferruginous tomentose at apex, 5–6 valved.

**THAILAND:** *Peninsula: Ranawng Prov.*, Kao Talu (Vanpruk 813: BKF). *Surat Prov.*, loc. incert. (Sanan 391 = BKF 15,262: SING & 480 = BKF 18,259: SING; Kerr s.n.: BM). *Trang Prov.*, loc. incert. (Smitinand 2,969 = BKF 17,205: SING); Huay Yawt (Smitinand 4,136: SING); Chong (Burn Murdoch? 3,840: SING). *Pattani Prov.*, Bukit Besar (Gwynne Vaughan 442: UC).

**MALAYSIA:** *Langkawi*, loc. incert. (Curtis 2,602: CAL & SING); Kuah (Curtis s.n.: SING). *Kedah*, Gunong Raya (Idris Kep. 33,175: SING); Bukit Wang (Din 33,009: SING). *Penang*, road side (Curtis 1,514: SING).

We have seen neither type nor authentic specimen from Indochina and so our identification of the species is based entirely on the description.

The holotype was Lanessan's collection from Condor island (Pulau Condor) off the Coast of Cochinchina. It was described as having both its calyx lobes within and its leaves completely glabrous. However Gagnepain who examined the holotype in Paris described the species as having leaves which are tomentose at first and then glabrous on both surfaces; the calyx lobes are described as being fugaceously tomentose in the third part within.

It appears therefore Koehne's had only an old specimen where the indumentum on the leaves and inside of the calyx lobes had fallen off to make them "very glabrous" (*glaberrimi*). The important character on which this species is separated from *L. floribunda* is that the calyx bud is unequally costate so that only 6 out of 12 ridges become visible in the top view. *L. anisoptera* differs from *L. siamica* in that the alternisepalous ridges (longer ones) are warted at the end, not patently cuspidate.

Gagnepain mentions here a specimen from Chiung-duing in the Tran Prov. of Cambodia.

51. *Lagerstroemia siamica* Gagnep. in Not. Syst. III (1918) 361 & Fl. Indoch. II (1921) 950 fig. 102–3; Craib. Fl. Siam. Enum. I (1931) 726. — **Fig. 53.**

*L. cuspidata* (Clarke) Craib. Fl. Enum. Siam. I (1931) 721; **syn. nov.**

*L. floribunda* Jack *sec.* Griff., Posth. Pap. IV (1854) 509; Koehne in Engl. Jahrb. IV (1883) 34 & in Engl. Pflanzenr. 17 = IV. 216 (1903) 266 fig. 55U & fig. 57D; King, Mat. Fl. Mal. Pen. III (1898) 351 p.p.; Ridl., Fl. Mal. Pen. I (1922) 823 p.p.; Craib, Fl. Siam. Enum. I (1931) 721 p.p.

*L. floribunda* Jack var. *cuspidata* Clarke in Fl. Brit. Ind. II (1879) 577: **syn. nov.**

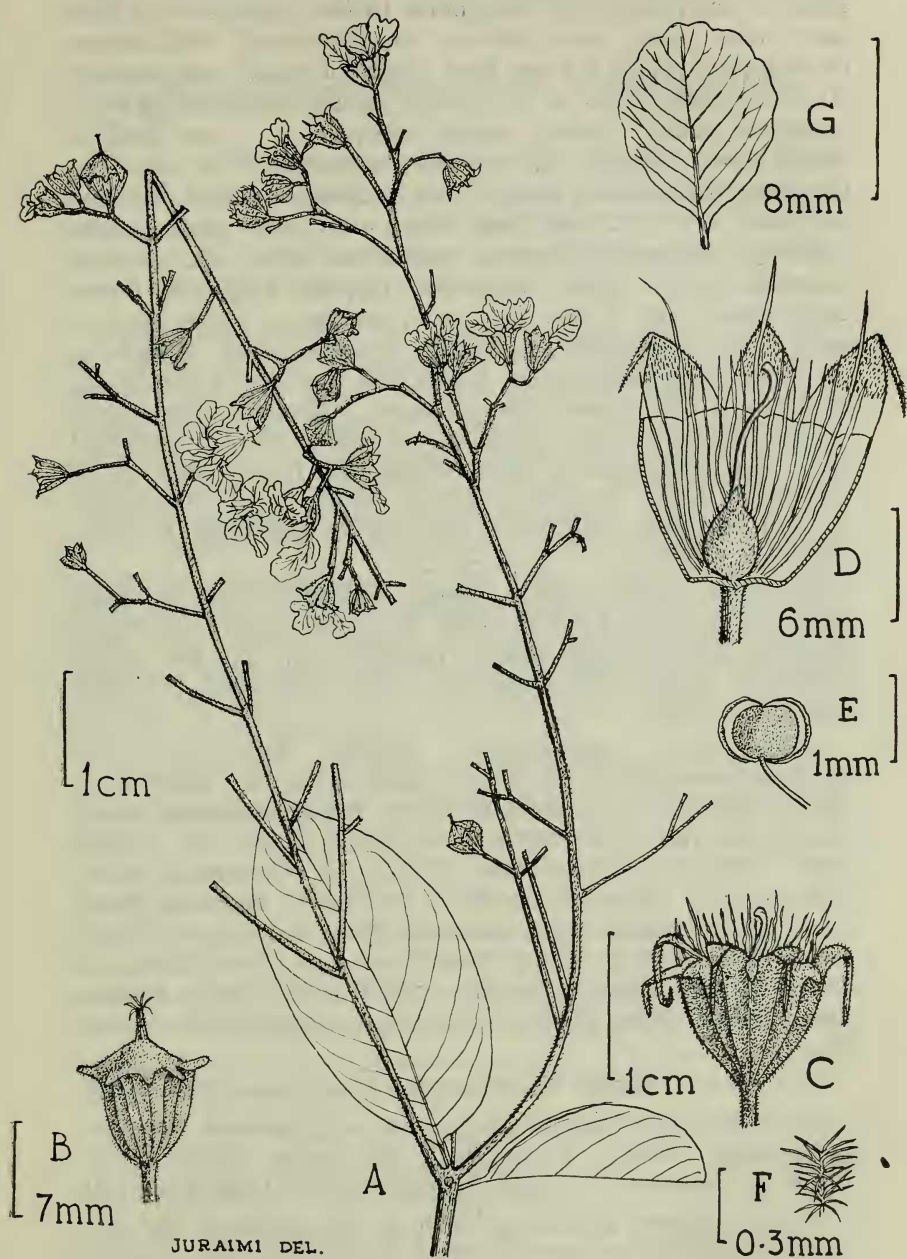


Fig. 53. *L. siamica* Gagnep. (Thaew 3,899 in BKF).

A, Fertile twig. B, Flower bud. C, Flower. D, Longitudinal section of flower. E, Anther. F, Hair. G, Petal.



A tree  $\pm 12$  m high. *Leaves* elliptic-oblong or oblong, 9–23 cm long, 4–10 cm broad, acute or obtuse at apex, sub-rounded or acute at base, yellow or ferruginous stellate tomentose on both sides when young, later glabrous or glabrescent, 7–12 nerved on each side; petiole 3–6 mm long. *Panicle* terminal, subpyramidal 20–50 cm long, yellow or ferruginous stellate tomentose all over, branchlets usually curved; pedicel unequal  $\pm 3$  mm long in lateral flower. *Flower bud* similarly tomentose, 8–10 mm long (including pedicelliform base), 6 mm in diam., turbinate, abruptly narrowed into  $\pm 3$  mm long base, with 12–14 acute ridges, equilong, episepalous broader, epipetalous acuter and patently cuspidate at the sinus; brush-like nipped. *Calyx* in flower campanulate with 3 mm long base, bearing a patent cusp at each sinus; lobes usually 6, slightly recurved. *Petal* subglobose,  $\pm 12$  mm long (including  $\pm 2$  mm long claw),  $\pm 9$  mm broad, undulate in the margin. *Stamens* many, subequal. *Ovary* short oblong, densely yellow tomentose. *Fruiting calyx* cup-shaped above the pedicelliform base; epipetalous ridges much more prominent; lobes recurved. *Capsule* oblong  $\pm 15$  mm long, 10 mm in diam., glabrescent but densely tomentose at apex, usually 6 valved.

**BURMA:** *South:* Tavoy District (Keenan, Aung & Rule, 1,046, 1,283, 1,321, 1,348 & 1,404: E; Parker 2,173: A); Karen (Brandis 1,368: CAL); Mergui (Griffith 105: E); loc. incert. (Griffith K 2,235: GH; Kurz s.n.: CAL; Blinkworth 21: BM; Leg.? s.n.: BM).

**THAILAND:** *South-Eastern:* **Kanburi Prov.,** Sai Yok (Kostermans 1,036 & 1,150: A; Larsen 8,706: A; BKF; E & SING); Ban Kar (Larsen 8,156: BKF). **Prachuabkirikhan Prov.,** Bangtaphan (Keith 363: SING); loc. incert. (Thaew 53 = BKF 3,899: BKF); Hua Hin (Kerr 13,468: E). **Chumphon Prov.,** Ban La Ngan (Kerr 11,448: BM). *Peninsular:* **Ranawng Prov.,** La-un (Kerr 16,462: BM). **Surattani Prov.** loc. incert. (Sanan 470 = BKF 14,935: SING); Ban Kawp Kep (Kerr 13,188: E). **Trang Prov.,** loc. incert. (Put 250 = BKF 1,203: SING). **Songkla Prov.,** Natawi (Kerr 15,818: BM & E); loc. incert. (Van Nooten 18: A).

**MALAYSIA:** **Kedah,** Bukit Tanjong Terai (Ishak 7,654: KEP).

**CULTIVATED:** **Formosa** (Leg. ? s.n.: A). **Thailand,** Bangkok, canal bank (Marcan 2,136: BM); loc. incert. (Kerr 11,026: BM & E). **Australia,** Brishbane, Kangaroo Point (Trapnell s.n.: A).

There is a great deal of variation in this species so that it is extremely difficult to separate neatly the form on the characters of calyx ridges, leaves and twigs. Some forms which have very prominent cusps to the ridges, have broad, almost cordulate leaves, while others have narrower leaves rounded or somewhat cuneate at base. Some specimens named by Craib as *L. cuspidata* cannot be separated from those he has named as *L. siamica*. Also their separation on any of these characters give a mixed distribution.



Griffith K. No. 2,235 in GH is probably a duplicate of Griffith 105 in E, on which Griffith (1854) had apparently based his description of *L. floribunda*.

52. *Lagerstroemia langkawiensis* Furtado et Montien **sp. nov.** —  
**Fig. 54.**

A *L. floribunda* sensu lato cui affinissima, calycibus majoribus, costis subaequalibus, eis apice alternisepalis patenter appendiculatis, alteris ad sepalis basin evanescentibus, fructibus majoribus, foliis ovato-lanceolatis saepe obliquis, costis nervisque subtus rubescente brunneis haec species facile distinguenda.

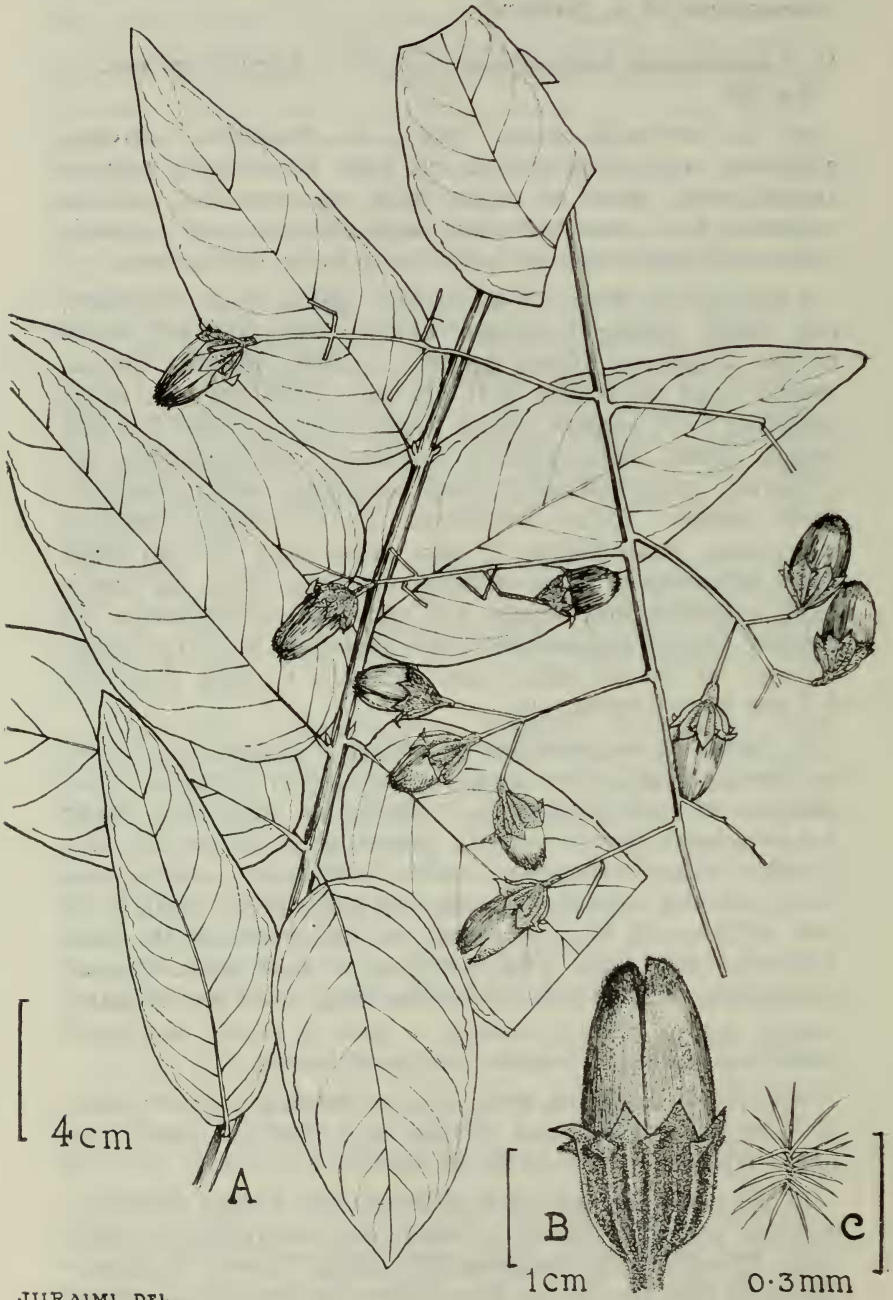
Arbuscula ut videtur. *Folia* utrinque glabra, ovate lanceolata, basi saepe oblique rotundata, obscure cordulata vel infima breviter angustata, apicem sensim angustata, margine sinuata, summo acuta vel obtusa, 6–18 cm long, 2.5–6 cm lata, nervis utrinsecus 7–11, ascutatis, subtus rubescentibus; petiolus 3–5 mm longus, glaber. *Infructescentia* terminalis, subpyramidalis vel cylindrica, ramulis primo brunneo tomentosa, dein glabrescens; flores ignotae. *Calyx* fructiferus, 12–16 costatus, brunneo tomentosus, campanulatus 15 mm latus, circa 10 mm altus, costis alternisepalis apice patenter cuspidatis, alteris ad sepalis basin evanescentibus; sepala 3–4 mm longa, reflexiuscula vel patentia. *Capsula* glabrescentis, apice tomentosa, 20–25 mm longa, oblonga vel ovato-oblonga, cum segmentis 6 divisi. *Pedicellus* 2–5 mm longus, tomentosus.

A treelet. *Leaves* lanceolate or oblong, 6–18 cm long, 2.5–6.0 cm broad, acute at the apex, sub-rounded or obtuse at base, glabrous on both surfaces, 7–11 nerved on each side; petiole 3–5 mm long. *Panicle* terminal, subpyramidal, flower not seen. *Fruiting calyx* ferruginous stellate tomentose, campanulate, 10–15 mm long (including 4–5 mm long pedicelliform base), 11–14 mm in diam.; 12–16 acute ridged, not decurrent into the base; 6–8 lobes with cusps often persistent at each sinus. *Capsule* glabrescent, elliptic-oblong, 20–25 mm long, 10–13 mm in diam., usually brown stellate tomentose at apex; 6 valved, each valve sometimes bearing at its apex a vestige of the style.

**MALAYA: Langkawi**, Pulau Timun (Henderson 29,119: SING — holotypus); Batu Ayam (Corner s.n.: SING — sterile); loc. incert. (Dolman 21,468: SING & KEP).

In the type specimen which is taken from a plant growing in quartzite and shale beach the leaves and the fruits are larger, while Corner's sterile specimen has smaller leaves. Apparently Dolman's collection is also from a limestone hill; it has smaller leaves and fruits.

This is the closest species to *L. siamica*. This species differ from *L. siamica* in having larger capsules and fruiting calyces, with more conspicuous cusps at the sinus, and ovate-lanceolate leaves. *L. floribunda* has also smaller capsules and calyces.



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Fig. 54. *L. langkawiensis* Furtado et Montien (Henderson 29,119 in SING — holotype).

A, Twig with capsules. B, Capsule. C, Hair.

53. *Lagerstroemia floribundia* Jack, Malay. Misc. I (1820–22) 38; DC., Prodr. III (1828) 93; Jack in Hk., Bot. Misc. II (1831) 82 (reprinted); Bl., Mus. Ludg. Bat. II (1852) 126 quoad partem typicam; Clarke in Hook. f., Fl. Brit. Ind. II (1879) 577 p.p.; Koehne in Engl. Jahrb. IV (1883) 34, in Engl. & Prantl. III. 7 (1891) 14 & Engl., Pflanzenr. Heft. 17 = IV. 216 (1903) 266 pro parte typica; King in Mat. Fl. Mal. Pen. (1898) 345 p.p.; Gagnep. in Fl. Gen. Indoch. II (1921) 953 p.p.; Ridl. Fl. Mal. Pen. I (1922) 823 p.p.; Craib, Flor. Siam. Enum. I (1931) 721 p.p.

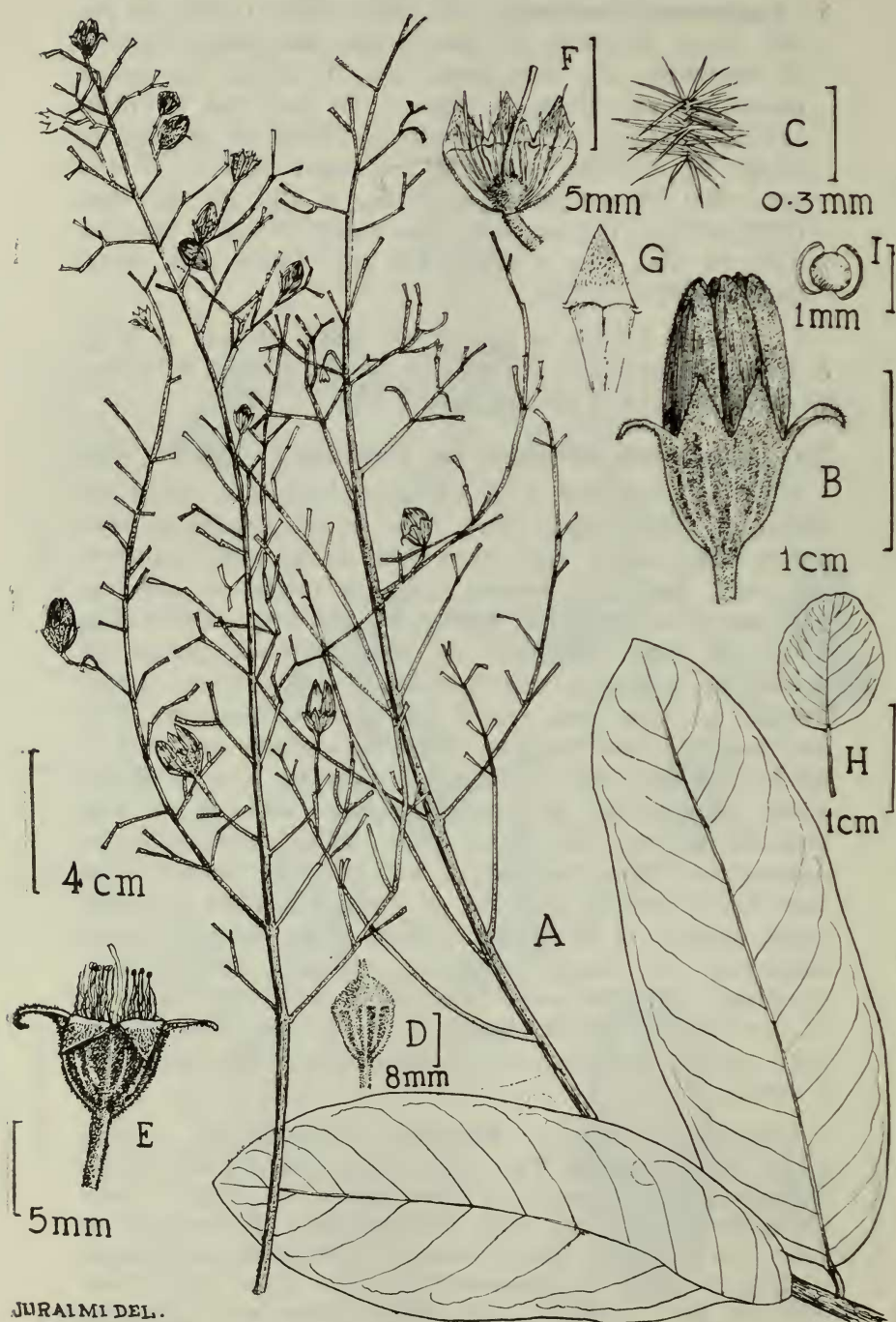
*L. turbinata* Koehne in op. cit. IV (1883) 34, and in Engl. & Prantl, Pflanzenf. III, 7 (1891) 14 fig. 5-v, et Engl. Pflanzenr. 17 = IV. 216 (1903) 266 figs. 55-v & 57-c.

53a. *Lagerstroemia floribunda* var. *floribunda* — Fig. 55, 56D.

A tree  $\pm$  10 m high. *Leaves* 6–23 cm long, 3–10 cm broad, oblong or elliptic-oblong, rarely ovate or sub-rounded at base, obtuse, rarely acute at apex, when young stellate pubescent above and along the nerves beneath, later glabrescent or glabrous, 6–12 nerved on each side; petiole 3–7 mm long. *Panicle* large 20–40 cm long, cylindrical on each branchlet, short and deciduously tomentose with ferruginous, stellate hairs; pedicel unequal  $\pm$  3 mm long. *Flower bud* similarly tomentose, 9–10 mm long, 6–7 mm in diam., turbinate, abruptly narrowed in the 2–3 mm long base, 10–12 ridged, up to the sinus, 6 sutured above, nipped. *Calyx* in flower campanulate with 3–4 mm long pedicelliform base; lobes 6, ferruginous stellate tomentose in the superior half within. *Petal* oblong with gradually cuneate to the base, 10–16 mm long (including  $\pm$  3 mm long claw), 7–12 mm broad, undulate in the margin. *Stamens* many, subequal. *Ovary* subglobose with densely ferruginous tomentose. *Fruiting calyx* cup-shaped above the abrupt pedicelliform base; lobes patent or recurved. *Capsule* elliptic-oblong, 12–16 mm long, 7–11 mm in diam., sparsely tomentose all over, but densely at the top, usually 6 valved.

THAILAND: *Northern*: **Prae Prov.** (Tawngbai s.n. = BKF 1,205: BKF). **Sukothai Prov.** (Silp s.n. = BKF 1,209: BKF). **Kumpeng Pet Prov.**, Meh Ping River (Kerr 2,034: BM). *Central*: **Chinat Prov.** (Put 2,643: BM). **Saraburi Prov.** (Rananand 8 = BKF 10,719: BKF). *South-Eastern*: **Cholburi Prov.**, Sriracha (Collins 23: BM & E). **Chanburi Prov.** (B.S. 182 = BKF 9,648: SING & 461 = BKF 12,210: SING); Chantaboon (Vesterdal 10-L: SING). *Peninsular*: **Surat Prov.** (Luaangsamarn 21 = BKF 1,201: SING). **Ranaung Prov.**, Kao Talu (Kerr 11,784: BM). **Songkla Prov.**, Hat Yai (Kingdon Ward 37,501: SING). **Yala Prov.** (Leg. ? 1,210: BKF & Thieb 25 = BKF 1,209: BKF). **Pattani Prov.** Banang Sta (Kerr 7,315: E).





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Fig. 55. *L. floribunda* var. *floribunda* Jack (A-C: Hooker 5,112 in GH; D-I: Collins 23 in BM).

A, Twig with capsules. B, Capsule. C, Hair. D, Flower bud. E, Flower. F, Longitudinal section of flower. G, Lobe to show inside.



**MALAYSIA:** **Kedah**, Alor Star (Allen s.n.: SING & Corner 31,518: SING); Kuala Muda (Hanafi 91,704: KEP, PNH & SING); Kuala Getil (Meh 10,185: E); **Perlis** (Saad 89,407: KEP & Ku-Ibrahim 89,405 & 89,406: KEP & Henderson 22,855: SING). **Penang** (Wallich 2,115A: BM), base of Penang Hill (King s.n.: SING — **neotopotype**). **Malacca** (Maingay Kew n. 653/2: GH).

**CULTIVATED:** **Thailand**, Bangkok, Temple (Marcan 294: BM); Wat Nong Kut (Smitinand 3,442: BKF). **Borneo**, Sabah, Jesselton (Mikil 41,940: SAN & SING). **Singapore**, Hort. Bot. (Kiah s.n.: SING). **East Indies**, loc. incert. (Hooker 5,112: GH). **Indonesia**, Java, Cult. in Hort. Bogor. (Sutrisno 107: SING & Van Nooter s.n.: SING); West Java, Bodjong Gedeh (Nedi et Idjan 450: SING).

Though no type specimen has been traced of this species, from Jack's description one has to agree with Gagnepain, Ridley and Craib as to its typification. Jack described the calyx being "turbinate, regularly marked with many deep longitudinal furrows or ribs"; also he stated that "before expansion, the calyx is obconical and nearly flat at top", or again that "the flower buds flat and even depressed at top."

Koehne's *L. floribunda* is the form that was described by Clarke as var. *cuspidata*, where the calyx ridges are irregular, the alternisepalous ones being cuspidate, and the flower buds cannot be said to be flat at the top. It is referred here to *L. siamica*.

Jack's type was from Penang which is apparently lost. Hence King's collection from Penang may be regarded as *neotopotype*.

53b. *Lagerstroemia floribunda* Jack var. *brevifolia* Craib, Fl. Siam. Enum. I (1931) 722. — **Fig. 56A.**

*L. floribunda* Jack v. *floribunda* sec. Gagnep. in Fl. Ind. II (1921) 955 pp; Craib op. cit. p. 721 pp.

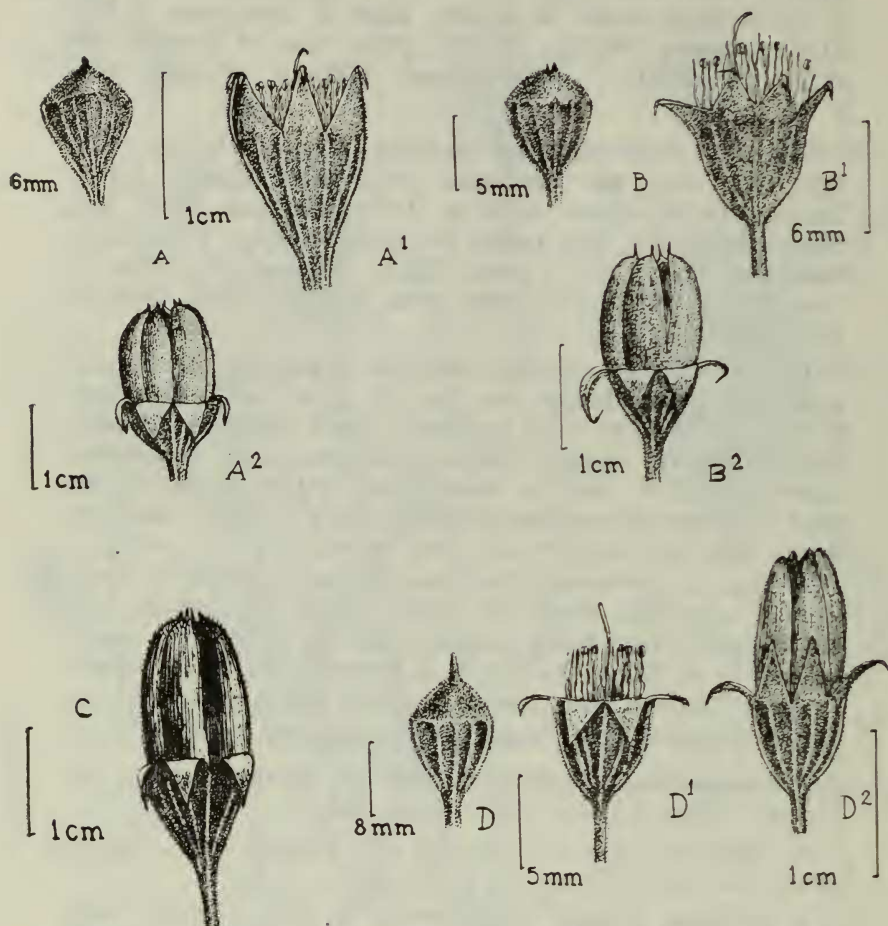
*L. turbinata* Koehne sec. Hosseus in Bot. Centrabl. Beih. XXVII, 2 (1910) 475 & XXVIII, 2 (1911) 416 pp; Craib in Kew Bull. (1911) 54.

This var. differs from var. *floribunda* in having smaller flower buds with golden or pale yellow tomentum, more acute and uniform ridges, the alternisepalous ones being slightly more prominent at the sinus, a prominence noticed also in fruits. The fruit is slightly smaller (12–14 mm long, 8–10 mm broad).

**CHINA:** Loc. incert. (cult.?) (Macartney s.n.: BM).

**INDOCHINA:** **Cochinchina**, Baria (Pierre 1,819: A, PNH & SING); Tintinh (Pierre 1,819: A); Bien-hao (Thorel 173 = 1,819: GH). **Cambodia**, Prov. Pen-Lover (Pierre 1,819: A).

**THAILAND:** *Northern:* **Prae Prov.**, East Mae-Yom (Thai For. Dept. no. 2,507: A). *Eastern:* **Srisaket Prov.**, Kantralak (Prayed 191 & 273: SING); Sisaket by the Menam (= river), (Hosseus 4: BM & E). *Central:* **Nakawn Nayok Prov.** (Smitinand 7,796: BKF). loc. incert. (Haase s.n.: BM).



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Fig. 56. A, *L. floribunda* var. *brevifolia* (A-A<sup>2</sup>: Hosseus 4: BM).

A, Flower bud. A<sup>1</sup>, Flower to show distinctly ridges. A<sup>2</sup>, Capsule.

B, *L. floribunda* var. *sublaevis* (B-B<sup>1</sup>: Vanapruk 958 in BKF; B<sup>2</sup>: Kerr 9,166 in E — isoholotype).

B, Flower bud. B<sup>1</sup>, Flower obscurely ridged. B<sup>2</sup>, Capsule.

C, *L. floribunda* var. *subecostata* (C: Kerr 13,618 in BM — holotype).

C, Capsule with faint ridges in calyx.

D, *L. floribunda* var. *floribunda* (D-D<sup>2</sup>: Tawngbi 1,205 in BKF).

D, Flower bud. D<sup>1</sup>, Flower bud subequally ridged D<sup>2</sup>, Capsule.

CULTIVATED: **West Pakistan**, Lahore, Govt. Gardens, (Parker s.n.: A). **Thailand**, Bangkok (Marcan 2,134: BM — isoparatype). **Indochina**, Tonkin, Hanoi, Bot. Gardens (McClure s.n.: A). **Philippines**, Rizal City (Quisumbing 2,108: SING).

Thorel's specimen was numbered 173 which has been crossed and made to 1,819 which is given also to Pierre's collection. Pierre's 1,819 is given to three different collections, one from Baria and one from Tintinh near Sang — both in South Cochinchina, and the third from Province of Pen-Lover in Cambodia.

The leaves are sometimes short, the sole character given by the author to distinguish this variety, but larger-leaved specimens are also found; the latter specimens were cited by Craib under var. *floribunda*.

53c. *Lagerstroemia floribunda* Jack var. *sublaevis* Craib Fl. Siam. Enum. I (1931) 722. — **Fig. 56B.**

This variety differs from var. *floribunda* in having dirty ferrugineous tomentum in flower buds which are also obscurely ridged, the ridges remaining also obscure in fruit.

The lobes of the fruiting calyx are longer, reaching nearly to the base of the cup. Capsule is oblong, almost truncate above.

**THAILAND:** *South-Eastern:* **Trat Prov.**, Koh Chang, Tung-Klong-Makok (Smitinand 2,235: BKF), loc. incert. (Vanpruk 958: BKF — isoparatype); Klawng Nonsi (Kerr 9,166: E — **isoholotype**).

From plant geographical reasons Craib thinks that Schmidt 628<sup>a</sup> listed under *L. floribunda* Jack in Schmidt, Fl. Koh Chang VI p. 243 in this variety. The holotype and one paratype were collected in Koh (= Kau) Chang, while the third paratype was from a cultivated plant in Bangkok.

53d. *Lagerstroemia floribunda* Jack var. *subecostata* Craib, Fl. Siam. Enum. I (1931) 722. — **Fig. 56C.**

This variety has the longest capsules among the varieties of *L. floribunda* and though one may describe the capsules as oblong, they are much more curved at the tip so that they are not truncate at the top. The ridges in fruiting calyx are more prominent than those in var. *sublaevis* but much less than in the other two varieties. The cup of the fruiting calyx is deeper than in all the other varieties, while its lobes are short, about  $\frac{1}{3}$  to  $\frac{1}{2}$  as long as the cup.

**THAILAND:** Padang Besar (Kerr 13,618: BM — **holotype**).

The collector notes that the tree is about 20 m high and quite common in the evergreen forest.

The tomentum in the fruiting calyx is light brown, and capsules in the specimen are also tomentose.

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